

**The
Himalayan Gazetteer
OR
The Himalayan Districts of the
North Western Province of India**

In 3 Vols. (6 Parts)

Edwin T Atkinson

Vol. 2 in 2 parts

Part - 1

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P R E F A C E .

THE system of transliteration used is the same as in former volumes and need not be given here. With the exception of the alphabetical list of villages, towns and local sub-divisions in the Himálaya of the North-Western Provinces, this volume concludes all that I have undertaken to prepare. Since April, 1876, I have not been in charge of the North-Western Provinces Gazetteer, and what I have done has been accomplished in the few hours of leisure that I could secure for the task and without assistance of any kind. The present volume was prepared for printing during my absence on furlough in 1882-83, and had the disadvantage of being carried through the press in India whilst I was far away from any references. Still, it is hoped that its contents will be found suggestive to many, of the lines that they should take up, not only for the higher aim of aiding in the great work of diffusing a knowledge of India and its peoples, but for the personal aim of following out some study which may give to the student a fresh interest in life and help to dissipate the "general dissatisfaction" which an eternal round of hearing petty cases and going through drills and parades, added to climatic influences, is certain to effect. The materials lie around in abundance whichever way one's tastes may lie, and it has been my principal object in all that has been written, to suggest to the rising generation of officials what they can do, and help them on the way.

The chapter on Zoology is local as far as the Insectæ, but for that division my work reviews the major portion of what has been written regarding the insects of India, excluding British Burmah. It is an attempt for the first time in any European language to take stock, as a whole, of the species that have been described as occurring in India, and is necessarily full of omissions; for it is not in the power of any one to examine thoroughly the vast literature on the subject. Such as they are, these lists are offered as an aid to the student of our Indian fauna, and have been made more useful by a short introduction to each order and a reference to works where the subject will be found explained and illustrated more

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fully. A work of this kind is necessary to induce those with time and tastes for investigating our exceedingly rich fauna to proceed with their work, and it is hoped that the publication of these lists will induce many to take to the study of some particular branch of natural history the materials for which have been indicated by me. I am indebted to Mr. Greig, Conservator of Forests, North-Western Provinces, for his interesting notes on the mammalia ; to Major G. F. L. Marshall for the list of birds, and to Mr. Theobald for aid in compiling the list of reptiles and land and fresh-water shells. The authorities consulted in the remaining orders are fully noticed by me in the 'References' at foot of each, and the whole represents the outcome of notes made during the last twenty years. The history of the Khasiyas of Kumaon and its rulers up to the publication of this volume has no existence, and what I now give may be fairly taken as an example of what can be done by piecing together facts gathered here and there from writers in Latin, Greek and Sanskrit. Pursuing the Khasiyas or Khasas wherever they have been named by these writers, and all allusions to the Himálaya of the North-Western Provinces and the sacred world-famed shrines of Badarináth and Kedárnáth, we have a fairly-connected history of the people and the country from the very earliest times. The local inscriptions and the records of the neighbouring country of Nepál fill up many a gap and confirm or explain tradition. For tradition, I have had the valuable notes of the late Rudradatta Pant, a learned Brahman of Almora, the results of whose inquiries were transmitted to me by Sir John Strachey. I also examined the records of all suits for revenue-free grants of land, chiefly decided by Mr. Traill, the first Commissioner of Kumaon, and from them obtained copies of the grants made by the earlier rulers, which afford a fair series from the fifteenth century onwards, and confirm in a great measure or correct the data arrived at from traditional sources. They also explain in many instances the reasons for the grants, and thus afford valuable materials for history, and with the local genealogies give a fairly exhaustive and accurate list of the rulers.

The travels of Hwen Thsang have been examined and confirmed, and the sites of Brahmapura and the Amazonian kingdom of the 'Queens of the East,' the *Strí Rájya* of the Puránas, have been ascertained. Tradition connected Kumaon with the celebrated

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Vikramáditya, but I have shown that the popular story of that Rája and his era cannot be accepted ; that the Saka era was really established in 79 A.D., to mark the consecration of the Buddhist Saka king Kanishka: but the Vikramáditya era was not used until the eighth century, though dating from 56 B. C., and was the invention of the anti-Buddhist faction. Neither of these eras is connected with the local history of Kumaon.

Another important bye-examination is the question of the connection between the Khasas and Katyúri rulers in Kumaon and the Kho people and Kator rulers in Kashkára at the western end of the Himálaya beyond Kashmír. This connection was suggested by the late Sir H. M. Elliot, and I have examined it so far as my materials allowed, and have afforded the inquirer, by references, means for judging for himself of the correctness or otherwise of the conclusions at which I have arrived (p. 438). One outcome of this digression is the conviction that the time has passed for attributing to the small Aryan immigration to which we owe the Vedas, the origin of all the races who are assumed to be of Aryan blood, and even for holding that all so-called Rajpúts are of Aryan descent. What Aryans were, and how to tribes of common origin the name has been denied, has been noticed ; and it would not be difficult to show that some of our oldest Rajpút tribes are of Baktrian, Parthian or Skythian origin. Indeed, no result of my researches is of more importance than this, that the Aryans of the Vedas were soon absorbed by the indigenous populations and the never-ceasing waves of immigrants, and have left behind them a language and a literature as their most lasting remains. The Khasiyas of Kumaon have as much right to be called an Aryan race in its widest sense as many others with a more established name, but the fact that they have not yet come up to their plains brethren in caste and religious observances still excludes them from the ranks of the twice-born. A close observer can still see amongst them the working of those laws which have in the course of centuries transmuted many a similarly-situated tribe into good Hindús. A prosperous Kumóni Dom stonemason can command a wife from the lower Rajpút Khasiyas, and a successful Khasiya can buy a wife from a descendant of a family of pure plains pedigree. Year by year the Bráhmanising influence proceeds, and

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people are becoming more orthodox in their religious observances and the fanes of the *dii minores* are becoming somewhat neglected. No more powerful influence in this direction exists than the teachings of our educational department, strange as it may seem ; but with education comes a fitness for higher employment, and with us in Kumaon, higher emoluments means respectability, and this in turn ensures orthodoxy. The few prayers of the hard-worked cultivator are improved into the lengthened ostentatious services of the well-paid leisure-loving clerk or contractor.

The chapters on religion¹ open up a new survey of the subject. We commence with religion as it is, and work upwards. We have before us a census of nearly one thousand temples, and the analysis of the forms worshipped in them gives us an accurate grasp of the existing phenomena. This accomplished, the historic method is adopted and the history of each form, or rather class of forms, is traced with the result that we find that Buddhism, though nominally dead, yet lives and is still the faith of the masses ; for the existing ceremonies and services can be traced back as readily to corrupted Buddhism as to Sivaism. This explains the apparent disappearance of Buddhism in the tenth to the twelfth century, and answers the query which has often arisen in the mind of the thoughtful observer,—how did Buddhism disappear ; what were the influences at work which led to the downfall of a religion which for fifteen centuries occupied the thoughts and held the affections of a great section of the Indian people ? The answer is clearly, that Buddhism has been absorbed by Sivaism and that both have been influenced to such a degree by the polydæmonistic cults of the aboriginal tribes as to preserve little of their original structure. This mingling of the pre-Brahmanical, Buddhistic and Animistic conceptions has given us the existing Hinduism of the masses, and has had even a considerable influence in moulding the tenets of the more esoteric schools.

Our examination of the religious festivals observed in Kumaon supports these conclusions. The more popular of these are regulated by the solar calendar and the Saka year, and where held according to the luni-solar year, are by no means of Brahmanical origin. They are the festivals at the two harvests ;

¹ These form, with considerable local additions, the substance of a paper read by me before the Asiatic Society of Bengal.

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those in honor of the Nágas at the Jeth Dasahra and Nág-pañchami, the great Saiva Sákta services of the first nine nights of Chait and Asoj, and the festivals in honor of the rural deities, Ghantakarn, Goril, Chaumu, &c. The sacrifice of kids is a part of almost all the ceremonies on these occasions, young male buffaloes are also offered, and in former times human sacrifices were not uncommon at the temples of the dark half of the consort of Siva. All these facts mark the non-Brahmanical origin of the more popular festivals of the mass of the people. An examination of the *sandhya* or daily prayers and of the services given in the *Dasakarmádi paddhati* or 'manual of the ten rites, &c.' also shows that the solid portion of the ritual is borrowed from the Tantras, the acknowledged fifth Veda of both Saiva and Baudha in the tenth century. Most of us have seen the natives of India at their daily devotions and have doubtless wondered what their meditations were, and what the curious movements of the hands within the prayer-bag (*gaumukh*) and muttered words intended. I am not aware that these have ever been the subject of inquiry, or that they have ever been recorded and explained, and now record the *pránáyám* and its prefaces after a lengthened practice of them myself. The other portions of the ritual have never been given in such detail, and without them the services cannot be either correctly appreciated or properly understood. Nearly all these ceremonies possess more or less ornate rituals which are full of those mystical formulæ, *dhāranis*, *mantras*, *vijas* and *múdras* which appear to have been the fashion all over the world when the Tantras were written—for India has its dark middle ages quite as much as Europe. In nothing is the kinship of race more distinctly shown than in the history of thought in India and in Europe; almost every theory advanced by Greek and Roman thinkers has its parallel in India; and in the kaleidoscopic mass of beliefs to be studied in any considerable Indian town, we can find curious and startling analogies with the broad beliefs of the inhabitants of our European cities. Let this real union help us in our efforts to know each other, and to this end I offer this portion of my last contribution to our knowledge of the North-Western Provinces.

CALCUTTA; }
20th March, 1884. }

E. T. ATKINSON.

ERRATA.

[List of some of the errata, chiefly due to the fact that the work was printed in India on revised first proofs whilst the writer was in England.]

Page.	Line from top of page.	For	Read
1	8	third	fourth.
4	14	<i>Presbytis schistaceus</i>	<i>Semnopithecus schistaceus.</i>
5	21, 24	<i>Inuus</i>	<i>Macacus.</i>
8	26	<i>Pachyura indica, A.</i>	<i>Crocidura caerulecens, Shaw.</i>
...	22	<i>Sorex socotus</i> <i>Hodge</i>	<i>Crocidura murina.</i>
9	1	<i>pygmaevides</i>	<i>pygmaevides.</i>
18	20	<i>Hyena</i>	<i>Hyena.</i>
22	1, 16	<i>Nemorhædus</i>	<i>Nemorhædus.</i>
44	11	<i>Hosvon</i>	<i>Hosvon.</i>
45	1	<i>Canine</i>	<i>Canine.</i>
46	29	<i>Antelope</i>	<i>Antelope.</i>
47	4	<i>Rhinoceros</i>	<i>Rhinoceros.</i>
48	5	<i>Drooks</i>	<i>Brooks.</i>
50	(No. 20)	<i>caerulecens</i>	<i>caerulecens.</i>
54	(No. 180)	<i>Brachypternus</i>	<i>Brachypternus.</i>
57	(No. 287)	<i>akrike</i>	<i>akrike.</i>
63	(No. 634)	red-headed	red-headed.
67	27	t. 100	t. 77.
68	16	<i>Ben</i>	<i>Ben.</i>
69	14	<i>calathus</i>	<i>calathus.</i>
106	(Margin)	<i>Pentamera</i>	<i>Pentamera.</i>
118	18	<i>Amœnus</i>	<i>amœnus.</i>
122	27	<i>colydiada</i>	<i>Colydiada.</i>
123	19	<i>Palestrinus</i>	<i>Palestrinus.</i>
125	12	<i>hirtus</i>	<i>hirtus.</i>
126	14	<i>chaetopisthes</i>	<i>chaetopisthes.</i>
127	27	<i>immutabilis</i>	<i>immutabilis.</i>
124	21	<i>Metricorhynchus</i>	<i>Metricorhynchus.</i>
...	25	<i>caeruleomaculata</i>	<i>caeruleomaculata.</i>
125	6	<i>caeruleipennis</i>	<i>caeruleipennis.</i>
126	14	<i>Oethenomus</i>	<i>Oethenomus.</i>
...	24	<i>Onyctenus</i>	<i>Onyctenus.</i>
128	15	<i>Blasyrus</i>	<i>Blasyrus.</i>
...	21	<i>peregrinus</i>	<i>peregrinus.</i>
129	25	<i>Enops</i>	<i>Enops.</i>
140	15	<i>Disosternus</i>	<i>Disosternus.</i>
141	18	<i>Coloborhombus</i>	<i>Coloborhombus.</i>
142	18	<i>plagithyrus</i>	<i>plagithyrus.</i>
143	8	<i>inaequalis</i>	<i>inaequalis.</i>
...	12	<i>fusca</i>	<i>fusca.</i>
...	20	<i>Celosterna</i>	<i>Celosterna.</i>
...	22	<i>Pharusia</i>	<i>Pharusia.</i>
146	1	<i>caesidida</i>	<i>Ossidida.</i>
...	10	<i>Aspidomorpha</i>	<i>Aspidomorpha.</i>
...	24	<i>Leucoptera</i>	<i>Leucoptera.</i>
147	1	<i>Galleruvida</i>	<i>Galleruvida.</i>
148	25	<i>Ococtelida</i>	<i>Ococtelida.</i>
150	24	<i>G. Edwardsii</i> of Westwood	<i>A. peregrinum</i> of Olivier.
154	8	<i>virgens</i>	<i>virgens.</i>

ERRATA.

Page.	Line from top of page.	For	Read
161	(under figure) ...	cells ...	areolets.
166	3 ...	<i>dele</i> whole line.	
167	2 ...	<i>Ædrus</i> ...	<i>Ædrus</i> .
...	28 ...	<i>pulchra</i> ...	<i>pulchra</i> .
...	...	<i>dele</i> <i>cruciata</i> .	
168	12 ...	<i>dele</i> <i>humeralis</i> .	
170	20 ...	<i>dele</i> <i>dentipes</i> .	
171	18 ...	<i>Metacanthus, Costa</i> ...	<i>Berytus, Serv.</i>
...	30 ...	<i>dele</i> <i>grandis, Gray.</i>	
172	13 ...	<i>Lohita</i> ...	<i>Macrochæria.</i>
...	19 ...	<i>Antilochus</i> ...	<i>Odontopus.</i>
...	...	<i>dele</i> <i>russus (As. Bur.) Stål.</i>	
...	30 ...	<i>dele</i> <i>grandis, Gray.</i>	
173	13, 14. ...	<i>dele</i> <i>Isyndus heros, Endochus famulus.</i>	
...	15 ...	<i>Eugoras</i> ...	<i>Darbanus.</i>
...	16 ...	<i>dele</i> <i>Sycanus collaris.</i>	
...	19 ...	<i>dele</i> <i>nigricollis.</i>	
...	20 ...	<i>dele</i> <i>costalis.</i>	
...	21 ...	<i>dele</i> <i>pulchrivertris.</i>	
...	Last line ...	<i>dele</i> <i>Ectrichotes.</i>	
174	13 ...	<i>dele</i> <i>Androclus granulatus.</i>	
175	17 ...	<i>Laocotrepes</i> ...	<i>Laocotrepes.</i>
...	...	<i>ruber</i> ...	<i>rubra.</i>
176	23 ...	<i>Aræa</i> ...	<i>aræa</i>
...	20 ...	<i>Pomponia, Tibicen, Stål</i> ...	[= <i>Pomponia, Tibicen, Stål.</i>]
...	33 ...	<i>costalis</i> ...	<i>circumducta.</i>
178	Omit line 3 ...	...	...
...	5 ...	<i>geminata</i> ...	<i>geminata.</i>
...	9 ...	<i>andamanensis</i> ...	<i>andamanensis.</i>
...	11 ...	<i>vivescens</i> ...	<i>vivescens.</i>
...	19 ...	<i>verisamor</i> ...	<i>pulchra.</i>
181	30 ...	omit ' <i>mauricianus.</i> '	
182	3 ...	<i>Isagonus</i> ...	<i>Isogenus.</i>
248	15 ...	omit ' <i>indica Linn.</i> '	
274	25, 28 ...	<i>Bâhlikas</i> ...	<i>Bahlikas.</i>
275	81 ...	some ...	some. ²
276	3 ...	<i>Achæmenides, Sassanides</i> ...	<i>Achæmenides, Sassanides.</i>
277	12 ...	<i>Bharatas</i> ...	<i>Bhâratas.</i>
...	...	<i>Aitariya</i> ...	<i>Aitareya.</i>
279	9 ...	<i>Bishikas</i> ...	<i>Bishikas.</i>
282	30 ...	<i>Chândâlas</i> ...	<i>Chandâlas</i>
...	32 ...	<i>Draviras</i> ...	<i>Drâviras.</i>
284	7 ...	<i>Siddhârâwa</i> ...	<i>Siddhashrama.</i>
294	Note ...	with these ...	with three.
301	Note ...	4 page ...	4 page 729.
307	Note ...	see page ...	see page 283.
313	4 ...	<i>Pâtana</i> ...	<i>Pâbana.</i>
346	37 ...	<i>Mohendra</i> ...	<i>Mahendra.</i>
347	4 ...	<i>Kateswar</i> ...	<i>Koteswar.</i>
348	28 ...	<i>Maheshamardini</i> ...	<i>Mahishamardini.</i>
368	Note ...	303 ...	359.
373	2 ...	at ...	as.
374	...	<i>Bodhisatwa</i> ...	<i>Bodhisattwa.</i>
376	Note last line but one.	279 ...	282.
384	3 ...	<i>Gandhabhillas</i> ...	<i>Gardhabhillas.</i>
...	Note line one ...	347, 337, 279 ...	358, 278, 282.
391	Note ...	<i>Appolladotru</i> ...	<i>Apollodotus.</i>

ERRATA.

Page.	Line from top of page.	For	Read
402	Note 5 add ...	' or rather ostrich's eggs' ...	
465	29 ...	Guhjswara ...	Guhjeswari.
469	8 ...	'actual records of' ...	important records ascribed to.

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THE
HIMÁLAYAN DISTRICTS
OF THE
NORTH-WESTERN PROVINCES.

CHAPTER I.
ZOOLOGY (*Vertebrata*).

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Mammals : Domestic cattle : Sheep : Shawl-wool : References. Tibetan fauna.
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THE fauna of Kumaun is as varied as its flora, but up to the present, with the exception of the mammalia, birds, fishes, and butterflies, it has not received the attention to which its interesting character and position entitle it. The materials for the two following chapters were collected with a view to give an account of the fauna of the North-Western Provinces, and the portion comprising the mammals and birds of the plains has already appeared in the third volume of the *Gazetteer*. We shall here confine ourselves to the mammals, birds, reptiles, and fishes of the hills. For the remaining orders it has not been possible (except in the case of butterflies) to separate the species common to the hills and plains from those only found in the hills and those only found in the plains, or indeed to distinguish clearly between the species proper to upper India and those found in other parts of India. This difficulty arises chiefly from the careless notation of locality adopted by the older writers on natural history, who were the first to describe many species, and whose names therefore stand to the present day and cannot be ignored. The word 'India' or 'Indes-orientales' attached as the locality to the descriptions of species, up to very recent

times, comprises widely different places. From indications it would appear to include in some instances the Phillipine islands, the islands of the Malay archipelago and other countries which the writer placed without specification in his ideal Indian region. In the same manner the words 'North-India' and 'North-Bengal' sometimes mean Asám and sometimes the North-Western Provinces and the Panjáb, so that to rediscover these species and assign them to their proper localities remains one of the objects which the present generation of observers should place before themselves. In the words of Wallace¹ :—"It is admitted that a knowledge of the exact area occupied by a species or a group is a real portion of its natural history, of as much importance as its habits, its structure or its affinities; and that we can never arrive at any trustworthy conclusions as to how the present state of the organic world was brought about, until we have ascertained with some accuracy the general laws of the distribution of living things over the earth's surface." Mr. W. Blanford has divided India into a series of provinces which would suit our purpose with the addition of the precise locality. They are (1) the Panjáb province or sub-region, including the Panjáb, Sind, Kachh and western Bajputána : (2) the Indian province, including the rest of the Peninsula and northern Ceylon, except the Malabar and Eastern-Bengal province : (3) the Malabar province, comprising the low country on the west coast of India from Cape Comorin to a little north of Bombay and the range of hills along the same coast as far north possibly as the Tápti river and also the hill tracts of southern Ceylon : (4) the Asám (Eastern-Bengal) province, limited by a line drawn northwards from the head of the bay of Bengal. The Indian province is further divided into sub-provinces :—(1) the Gangetic sub-province or Hindustán extending south as far as the Narmada, and in its eastern portion comprising only the valley of the Son and that of the Ganges as far as Benares : (2) the Deccan sub-province stretching from the Narmada to the Krishna; bounded on the east by a line drawn north and south a little east of Nágpur, and on the west by a line drawn a little east of the crest of the Western Gháts or Sahyádrí range : (3) the Bengal sub-province, bounded on the west by the preceding and extending as far south as the Godávari : (4) the Madras sub-

¹ Island life, p. 12.

province includes the remainder of southern India and the plains of northern Ceylon. An insect caught at Allahabad should be labelled "Hind. (All'd.)," by which the province and precise locality is at once distinguished. We need hardly remark that the geographical distribution of animals is one of the most interesting branches of natural history and one that leads indirectly to results bearing on the most important biological questions of the day.

In the following pages, with the exception of the birds and butterflies, the lists do not pretend to be exhaustive or to be in all cases quite up to the most recent and approved systematic arrangement. With the small leisure and the smaller materials for reference at my command it would be hopeless to attempt completeness. The lists of the Arachnida and Insecta are compiled from my notebooks and include the jottings-down of many years. Where the word 'India' has been given as the locality from which a recorded species was received, no mention of the locality is given in the lists; but where any part of India is distinctly indicated, it is noted in brackets.¹ Many of these localities may have been given in error, but for this the list is not responsible. The references at the foot of each section include the authorities from which many of the names of Indian species have been taken, and a short notice under each order will give a very general idea of the animals belonging to it and the sources of my information. It is with much reluctance that these imperfect notes are submitted in their present form, but the knowledge that opportunity for revision and completion will probably never occur and that they are the only ones of their kind yet available has wrung an unwilling consent to their publication, in the hope that

¹ The following abbreviations have been used:—

As.	for	Asám, including Silhat, Kachár, Sikkim, Nága hills.
Ben.	"	Bengal: evidently used in a broad sense.
Bom.	"	Bombay: includes the presidency.
Cal.		Calcutta.
Gen. In.		Central India: used loosely.
Dec.		Deccan, especially Púna.
Him.		Himálaya.
In.		All India: used where the insect is recorded from Mad., Bom., B
Mad.	"	Madras: includes Carnatic, Coromandel coast.
Mal.	"	Malabar.
Mus.	"	Mussooree.
Nep.	"	Nepál.
N. I.	"	North India: either Hindustán or Asám.
N. B.	"	North Bengal: chiefly N.-W. Provinces and Oudh.
Nil	"	Nílgírls, in Madras.
Panj.	"	Panjáb.

they may induce others with more time and better materials to give us a complete history of the lesser forms of animal life in India.

MAMMALIA.

So much has been written about the mammals of India that in the present list of the principal species that are found in Kumaun, a reference to Jerdon or some other authority is alone made, which with the notes on the papers of Hodgson and others at the end of the section will sufficiently indicate the sources of more precise information. For the local notes on the Mammalia I am indebted to Mr. G. Greig, Conservator of Forests, who has kindly placed the results of some fifteen years' observation of the wild animals of these hills in my hands.

SIMIADÆ—Monkeys.

Presbytis schistaceus, Hodgson—Himálayan Langoor—*Ganilangúr*. Jerdon, 6 : Hodgson, J. A. S. Ben., IX., 1211.

Large herds of this handsome monkey are commonly to be met with throughout the wooded portions of the hills, from the dense jungles of the submontane tract up to the oak and fir forests at 12,000 feet above the level of the sea. The *langúr* feeds on wild-fruits and flowers and on the buds and young leaves of many trees and plants, but acorns form its chief food from August to February, and during those months it is found in all the great oak forests. Potatoes, when procurable, are greedily eaten, but it seldom attacks other cultivated crops. It may, however, occasionally be seen stealing into a garden to feed on the buds and tender leaves of the rose. The *langúr* is very common about Naini Tál and Mussooree and in the mixed forests of the Bhábar, where it often falls a prey to the stealthy leopard that lies in wait for it at the foot of a tree. It is probable that the species which frequents the forests of the submontane tract in the cold season migrates to the outer range in summer, but it does not go far into the interior, and the species that is found to the north of the outer range of hills appears to be permanently resident there and is found there at all seasons of the year. It is a curious fact that the deer known as *sámbar*, *chítal*, and *gural* are frequently seen near a herd of *langúrs*. The two former may keep near the monkeys for the sake of the fruit that is shaken from the trees, but the *gural* cannot have such an object in view as

it does not eat fruit. He may, however, desire the society of the *langúrs* for protection, since there is no animal more quick of hearing. The *langúr* is frequently the first to give notice of the approach of a leopard or tiger. In evidence of the friendly feeling that exists between these monkeys and the deer tribe it may be worth recording that a herd of *chital* has been seen feeding under a tree, whilst the *langúrs*, hanging from the branches, playfully touched the backs of the deer with their fore-hands. *Langúrs* are easily tamed and differ from the Bengal monkey in not being mischievous or vicious. One had the run of a vegetable garden and used to feed on the peas without doing any further damage, finishing one pod before taking another. He was very amiable and indolent, resting on a branch all day after his meals until he got hungry again. He was never angry with anyone or anything and never appeared to imagine that dogs or men could attempt to do him any harm. The Himálayan *langúr* is easily distinguished from the Bengal *langúr* (*P. Entellus*) by its hands being concolorous with its body and by its loud grunting note of alarm, whilst the hands of the latter are jet black and its voice is more of a deep bass mournful bellow.

Inuus Rhesus, Desm.; *I. erythræus*, Schr.; *Pithex oinops*, Hodgson—The Bengal monkey—*Bandar*. Jerdon, 11 : Hodgson, J. A. S. Ben., IX., 1211.

This is the common red-faced and red-callositied monkey found all over these provinces and extending in the Himálaya up to 7,000 feet. It feeds on many sorts of grain, fruits, flowers, buds and leaves and even insects, such as locusts and grasshoppers. The herds generally establish themselves on a steep bank in a mangrove near a village or in forest or precipitous ground near outlying cultivation, whence they emerge when unobserved and do immense damage to cultivated crops. They are mischievous, treacherous and dirty in their habits and do not form desirable pets.

Inuus Pelops, Horsfield—Hill monkey. Jerdon, 11.

Major Hutton obtained this monkey from the interior of the Mussooree hills, where it replaces *I. Rhesus* at high elevations, but the difference between the two species is not well established.

CHIROPTERA.

Pteropus medius, Tem. : *P. Edwardsii*, Geoff. : *leucocephalus*,
Hodgs. : *assamensis*, M'Call.—Flying-fox—*Chungidari*. Jerdon,
18 : Hodgson, J. A. S. Ben., IV., 700 : Tickell, Cal. J. N. H., III.,
29 : Dobson, 18.

This species is common throughout the Tarai and feeds on fruits,
wild and cultivated.

Gynopterus marginatus, Geoff. ; *Pteropus pyrivorus*, Hodgs.—
Small fox-bat—*Chhoti chungidari*. Jerdon, 20 : Hodgson, J. A. S.,
Ben., IV., 700 : Dobson, 24.

Common throughout all India, feeding on fruits, wild and cul-
tivated.

Rhinolophus luctus, Tem.—Large leaf-bat. Jerdon, 23 : Hodg-
son, J. A. S., Ben., XII., 414 : (*R. perniger* ?), Dobson, 39.

Procured from Mussooree, Nepal, Darjiling.

Rhinolophus mitratus, Blyth—Mitre leaf-bat. Jerdon, 24 :
Blyth, J. A. S., Ben., XIII., 483 : Dobson, 42.

Procured from Mussooree.

Rhinolophus ferrum-equinus, Schreb.; *tragatus*, Hodgs.—Dark-
brown leaf-bat. Jerdon, 24 : Hodgson, *l.c.*, IV., 699 : Dobson, 53.

Procured from Mussooree and Central Nepal.

Rhinolophus Pearsonii, Horsf.—Pearson's leaf-bat. Jerdon,
25 : Dobson, 43.

Common about Mussooree, procured at Darjiling.

Rhinolophus affinis, Horsf. ; *Rouxii*, Tem.—Allied leaf-bat.
Jerdon, 25 : Dobson, 47.

Procured at Mussooree.

Rhinolophus garoensis, Dobson. Mon., 48.

Procured at Mussooree.

Rhinolophus macrotis, Hodgs. Large-eared leaf-bat. Jerdon,
26 : Hodgson, *l.c.*, XIII., 485 : Dobson, 45.

Procured from Nepal and Mussooree, but rare.

Phylorhina armiger, Hodgson—Large horse-shoe bat. Jerdon,
27 : Hodgson, *l.c.*, IV., 699 : Dobson, 64.

Procured from Mussooree, Nepal, Darjiling.

Phyllorhina diadema, Geoff. ; *H. nobilis*, Cantor. Dobson, 61.

Procured from Dehra Dún.

Phyllorhina speoris, Schneider.—Indian horse-shoe bat. Jerdon, 27 : Dobson, 67.

Procured in Dehra Dún and near Pána.

Phyllorhina bicolor, Tem. Dobson, 70.

Procured in Dehra Dún.

Phyllorhina fulva, Gray. Dobson, 72.

Procured at Hardwár.

Megaderma Lyra, Geoff. ; *M. carnatica*, Ell. ; *M. schistacea*, Hodgs.—Large-eared vampire bat. Jerdon, 22 : Hodgson, J. A. S., Ben., XVI., 889 : Blyth, *Ibid.*, XI., 225 : Dobson, 78.

Not uncommon in the submontane tract. Blyth has shown that this species sucks the blood from other bats. Attaching itself firmly behind the ear it sucks the blood during flight and when its victim falls exhausted, devours it.

Plecotus auritus, Linn. ; *P. homochrous* and *darjilingensis*, Hodgs.—Long-eared bat. Jerdon, 47 ; Hodgson, *l.c.*, XVI., 894 : Dobson, 84.

Same as the European species ; found throughout the hills, Simla, Mussooree.

Vesperugo noctula, Schreb. ; *Vespertilio labiata*, Hodgson. Jerdon, 36 ; Hodgson, *l.c.*, IV., 700 : Dobson, 89.

Procured from the central region of Nepál.

Vesperugo serotinus, Schreb. ; *Vespertilio noctula*, Geoff.—Silky bat. Jerdon, 34 : Dobson, 109.

Procured beyond Mussooree, rare.

Vesperugo Leisleri, Kuhl—Hairy-armed bat. Jerdon, 34 : Dobson, 91.

Common in the valleys beyond Mussooree.

Scotophilus Temminckii, Horsf. ; *V. castaneus*, Gray—Common yellow bat. Jerdon, 38 : Dobson, 120 : J. A. S., Ben., XX., 157.

Found all over India and reported from Dehra Dún and the Taráí.

Vespertilio mystacinus, Leis. Dobson, 133.

Found throughout the Himálaya.

Vespertilio murinaus, Schreb. Dobson, 137.

Found throughout the north-west Himálaya.

Vespertilio murinoides, Dobson. Mon., 138 : J. A. S., Ben., XLII., ii., 205 : Jerdon, 46.

Found in Chamba and Mussooree.

Vespertilio nipalensis, Dobson. Mon., 141.

Procured from Nepál.

Harpiocephalus griseus, Hutton. Dobson, 154.

Found in Mussooree.

Harpiocephalus leucogaster, Edw. Dobson, 157.

Found in the north-west Himálaya and Tibet.

Murina formosa, Hodgs.; *Nycticejus Tickellii*, Blyth—Beautiful bat. Jerdon, 42 ; Hodgson, J. A. S., Ben., IV, 700.

This beautiful yellow bat has been procured from Sikkim. Nepál, and the Himálaya, also from Central India.

TALPIDÆ.

Talpa micrura, Hodgs. ; *T. cryptura*, Blyth—Short-tailed mole. Jerdon, 51 ; Hodgson, J. A. S., Ben., X., 910 ; XIX., 217.

Procured from Darjiling, Nepál, and Kumaun.

Talpa macrura, Hodgs.—Long-tailed mole. Jerdon, 51 ; Hodgson, J. A. S., Ben., XXVII., 176.

Procured from Sikkim, doubtful in Kumaun.

SORICIDÆ.

Pachyura indica, Ani. ; *Sorex corulescens*, Shaw—Musk-shrew, musk-rat—*Chachundar*. Jerdon, 53.

Common throughout the hills and plains, procured at Naini Tál, Almora and Mussooree, possibly imported in baggage.

Sorex Tytleri, Blyth—Dehra shrew. Jerdon, 56.

Procured from Dehra Dún.

Sorex soccatus, Hodgs.—Hairy-footed shrew. Jerdon, 57 ; Hodgson, Ann. Mag., N. H., XV., 270.

Procured from Sikkim, Darjiling, Nepál, and Mussooree.

Oreocidura pygmaeoides, And. ; *Sorex micronys*, Blyth—Small-clawed pigmy shrew. Jerdon, 58 : Blyth, J. A. S., Ben., XXIV., 33 : Anderson, *ibid.*, XLVI., ii., 279.

Procured from Kumaun and Mussooree.

Erinaceus Grayii, And. ; *E. cellaris*, Gray—North Indian hedge-hog. Jerdon, 62.

Doubtfully in Dehra Dún : for synonymy of the Indian hedge-hogs see Anderson in J. A. S., Ben., XLVII., ii., 195.

URSIDÆ.

Ursus Isabellinus, Horsf.—Brown bear—*Lal-bhāta*, *bhura*. Jerdon, 69.

This is the red, gray, or silver or snow bear of sportsmen. It is found in Dārma and Byáns, but, strange to say, it has not been distinctly noticed between the Pindar and Trijogi-Naráyan on the ridge separating the Mandákini from the Bhilang. To the west it occurs throughout native Garhwál and Bisahr to Kashmir and also across the passes in Tibet. As a rule it seeks the upper ranges, living along or above the upper limit of forest far away from the haunts of man and feeds on roots, weeds, grasses and even insects, lizards and snakes. It trusts almost entirely to its sense of smell to detect the presence of an enemy, and with a favourable wind will distinguish a man fully a quarter of a mile off. Its powers of sight are, however, so weak that it is one of the easiest of the larger animals to stalk and shoot. In one case, the wind being favourable, a sportsman was able to creep up to within fifteen feet of a brown bear that was feeding on a slope without alarming it. In some places this bear visits the maize plantations and the orchards, and in many places solitary males take to sheep-stealing and commit great havoc amongst the mountain flocks. Owing to the formation of its claws, it is a bad climber and seldom mounts a tree. As a rule, the brown bear is a timid animal and disinclined to fight, but instances are not wanting in which it has shown considerable determination and courage. It hibernates from December to March, retiring to a hollow in the rocks or under the roots of a tree. The fat that has accumulated in the summer is all absorbed during the long sleep, and in April the bear awakes thin and ragged, the stomach quite empty and the fur full of scurf. The brown bear

pairs about August, and the young ones, generally two, are produced in April or May. It is very partial to raw flesh and readily eats one of its own kind when the skin has been removed, as well as the carrion of cows that have died from disease or accident. See note on Horsfield's description in Cal. J. N. H., III., 268.

Ursus tibetanus, Cuv. : *torquatus*, Schinz.—Himálayan black bear—*Rikh, bhálu*. Jerdon, 70.

This bear is very commonly met with all through the hills from the Tons to the Sárila and from the upper limits of vegetation down to as low as 3,000 feet. It has been procured at Gorighát on the Ganges about eight miles above Hardwár, but is, however, seldom seen in the lower hills except during winter. It climbs trees far better than the brown bear and frequently mounts them to plunder the combs of the honey-bee. The black bear is very destructive to such crops as maize, *mandua*, buckwheat and gourds. It is also exceedingly fond of fruit, such as apricots, peaches, apples and walnuts, and occasionally grazes on green wheat and barley when they are young and succulent and before the ear has formed. At times, when cultivated fodder is not procurable, it feeds on acorns, the young shoots of the *ningál* (hill bambu) and other jungle fruits, roots and grasses. Both the black and the brown bear devour beetles, grasshoppers and locusts and eat flesh both fresh and putrid. Occasionally one takes to killing and eating sheep, but an old resident well acquainted with these hills declares that in his experience he has only known of one case in which a black bear had become a confirmed sheep-stealer. This was a very large old male covered with scars and bearing the marks of three bullet wounds. He cared neither for men nor dogs and died fighting bravely to the last. The black bears of the upper ranges hibernate, but those of the lower hills do not. They show more fight than the brown bear and many villagers are mauled by them every year. As a rule, the black bear will never touch a man if the man shows a bold front, but if he is come upon suddenly and at close quarters and the man turns to run, the courage of the bear rises to the occasion and he follows the man and claws him on the head and face.

The bear usually charges on all fours at a gallop like a great dog, with its mouth open and emitting a loud angry grunt at almost

every stride. Those that live in the upper ranges produce their cubs, usually two at a time, in April-May, but those frequenting the lower ranges are not so regular in their habits. All make their dens in naturally-formed caves, and to these the female retires during the period of gestation and old and young seek a refuge in them when pursued. The black bear has almost if not quite as inferior a sense of sight as the brown bear and an equally keen sense of smell. It is more intelligent and can easily be tamed, but, strange to say, if noosed by the foot in a trap and unable to break away by force, it never attempts to sever the rope or sapling to which the gin is attached and remains a prisoner until it dies or is killed. This fact is vouched for by a well-known sportsman. Black bears are sometimes killed by tigers, and specimens have been procured which bore unmistakably the marks of a tiger's claws and teeth. It is doubtful whether *Ailurus fulgens*, Cuv., the red cat bear, the *wáh* of Nepál and *bhauna richh* of the west, occurs in these provinces. It has been procured in Nepál and may be easily recognised from the deep ochreous red colour of the head, and its face, chin and ears within being white. It is reported as having been found to the west and east of our limits and may possibly occur within them. See Jerdon, 74 : Hodgson in J. A. S., Ben., VI., 560.

Ursus labiatus, Blain ; *Bradypus ursinus*, Shaw ; *Melursus lybicus*, Meyer—Sloth bear—*Jábar*. Jerdon, 72.

This bear hardly bears out its English appellation, for it can run fairly fast and is not of slothful habits. It is found all through the *sál* forests of the lower hills and in the Taráí, where it is frequently met with in swampy ground and marshes and is much feared by elephants. Its principal food is ants, beetles, grasshoppers, fruits, roots, and honey, and it probably also consumes frogs, fish and flesh when it can lay hold of them. Its powers of suction and propelling wind from its mouth are remarkable. With its powerful claws it scrapes a large hole at the base of a white-ant's nest, then blows away the dust and sucks out the larva. It is especially fond of the fruit of the *mahua*, *jáman*, and *D. Melanoxyton*. The young are produced at various times, but usually about December to January, and in March they are able to accompany their mother in her travels. They are easily tamed and become quite tractable. See Tickell's paper, Cal. J. N. H., I., 199.

MELIIDÆ.

Mellivora indica, Shaw ; *Ursitaxus inauritus*, Hodgs.—Inuián badger—*Biju*. Jerdon, 78 : Hodgson, *As. Res.*, XIX., 60 ; J. A. S., Ben., V., 671.

This species is not uncommon in the submontane tract and lower outer hills. Specimens have been procured at Rám-nagar and in the Pátli Dún. It feeds on rats, mice, birds, frogs and insects, and is often very destructive to poultry. It probably also feeds on honey when procurable.

MUSTELIDÆ.

Martes flavigula, Bodd. ; *Hardwickei*, Horsf.—Black-capped marten—*Chitrola, titarola*. Jerdon, 82.

This very common animal is very destructive to game in Kumaun and occurs almost from the southern boundary up to the limits of vegetation. It is on the move all hours of the day and generally hunts in pairs, though as many as ten have been seen hunting together at the same time. It is a very fair runner on the ground and as active as a squirrel in trees and is perhaps the boldest of all the minor carnivora. Some dogs chased a pair and caught one whilst the other took refuge in a tree ; although the owner of the dogs was standing by encouraging them to kill the one that had been caught, the other came down from the tree and vigorously attacking the dogs perished in defence of its companion. Natives say that martens kill small deer and they are certainly very destructive to poultry. They travel great distances and are constantly changing their ground, so that it is difficult to meet with them.

Mustela sub-hemachalana, Hodgs. ; *M. humeralis*, Blyth—Himálayan weasel. Jerdon, 83 : Hodgson, J. A. S., Ben., VI., 563.

This small animal frequents the walls of terraces and houses that have been built of dry masonry, but is nowhere common.

Mustela Kathiah, Hodgs.—Yellow-bellied weasel—*Káthiyasyla*. Jerdon, 83 : Hodgson, J. A. S., Ben., IV., 702.

Said to occur in eastern Kumaun.

Mustela Erminra—Stoat, ermine.

Specimens have been procured from Jaunsár and Bisahr and it is common in Lahúl, Spiti, and Tibet. Jerdon, 84.

Lutra Nair, Cuv. ; *tarayensis*, Hodgs. ; *chinensis*, *indica*, Gray—Common Indian otter—*Ud, ud-billao, pan-ud*. Jerdon, 86: Hodgson, J. A. S., Ben., VIII., 319.

This otter is found throughout the Taráí and in all the larger streams along the foot of the hills, ascending the rivers to thirty miles and perhaps more. It is difficult to determine where it gives place to the hill otter. It usually hunts in parties of five or six, though as many as twelve have been seen together in the Rám-ganga in the Pátli Dún and twenty in the Sús-wa in Dehra Dún. The skin must be 'plucked' before becoming the beautiful otter fur so popular for the trimming of ladies' dresses. It is better to pluck the skin before it is taken off, an operation which can usually be done by relays of men in about six hours, as the long hairs come out very easily, leaving the under fur exposed. The fur of the Indian otter is very good, though somewhat inferior in texture to that of the European species. It is in great request with the Tibetans and Bhotiyas, who use it as ear lappets for their caps.

Lutra vulgaris, Erx. ; *L. monticola*, Hodgs.—Hill otter. Jerdon, 88 : Hodgson, J. A. S., Ben., VIII., 319.

It is not clear whether this otter occurs in the Kumaun Himá-laya. It is the common otter of Europe, and, so far as is known, is restricted to the interior of the Himá-laya.

Aonyx leptonyx, Hors. ; *indigitata*, *sikimensis*, Hodg. ; *Hornfieldii*, Gray—Clawless otter. Jerdon, 89 . Hodgson., l. c., VIII., 319.

This small otter is of an earthy brown or chestnut-brown above and has been procured in the Sárda at Barmedo, above the junction of the Alaknanda and Pindar near Karnprayág, in the Nandákini above Nandprayág and in the Bhilang. The claws are very minute, and hence its English name. Otters are easily tamed and become very much attached to their owners.

FELIDÆ.

Felis Tigris, Linn.—Tiger—*Sher, shu, bāgh*. Jerdon, 92.

The tiger is found from the Taráí up to 10-11,000 feet and is believed occasionally to cross the passes into Tibet. Those which are found on the outer ranges doubtless migrate to the Bhábar and Taráí, but those found in the interior never leave the hills. They are quite different in appearance, being more bulky, with longer and

more furry hair and shorter and thicker tails. Twenty years ago tigers were very numerous in the Bhábar, the Tarái and the hills, but owing to the extension of cultivation, the increase of population and the greater use of arms of precision, their numbers have considerably diminished. The hill tiger is a quarrelsome animal and often attacks one of its own species that trespasses on its domain. In 1870 a dead tiger was brought into camp that had apparently been killed by another tiger, and about three years ago an officer found a very old male tiger in the Jaunsár hills that had been killed and partially eaten by another tiger. The tiger does not confine itself to animals killed by it in the chase. It has been known to eat the putrid carcase of a buffalo that had died by accident, and in the hills the common bait for the dead-fall trap is a dead sheep or goat. The pairing time is from December to January, when the males may be heard 'making their peculiar sighing-bellowing noise to attract the females. The females appear to breed every second or third year, producing, generally in the cold weather, from two to five and sometimes six cubs at a birth. It is very rarely, however, that more than three survive, and generally there are only two and often only one. The largest skins have been procured from the Bhágirathi valley and one over 9'9" from the nose to the tip of the tail in Jaunsár. Several over ten feet have been obtained in the Tarái. Tigers always kill large animals, such as a full-grown buffalo or bullock, by seizing the throat from below; but with smaller animals, such as sheep, deer and man, they usually grip from above and break the neck. It will be useful here to summarise the information that we possess regarding the statistics of deaths from the attacks of wild animals. These, though now some sixty per cent. less than they were thirty years ago, are still sufficiently numerous to place the hill-districts of these provinces at the head of the list both for deaths of human beings from tigers, leopards and bears and for the numbers of these animals destroyed in order to claim the rewards. In the earlier years of British rule Katyúr and Gangoli were almost deserted on account of the presence of numerous "man-eating" tigers. As late as 1848, Mr. Batten, writing of Gangoli, describes Pattis Bel, Athagaon and Kamsyár as excessively jungly and harassed by tigers:—'In some of the tracts near the rivers notorious 'man-eaters' are hardly ever absent and at times the

loss of human life is considerable.' In the Bhábar, as at present, tigers were numerous. Pargana Chandpur and the Pátli Dún in Garhwál¹ as well as the whole of the Taráí district long held an unenviable notoriety as well for the insalubrity of their climate as for the number of tigers that they harboured. In the twenty years between January, 1860, and January, 1880, the records of the Kumaun district show that 692 persons were killed by wild-beasts or snakes, without reckoning those where the cause of death was not ascertained or not reported, which may safely be estimated at one-fourth more. Fifty human lives are thus lost every year in the Kumaun district alone. During the same period, in the same district, 624 tigers, 2,718 leopards, 4,666 bears and 27 wild-dogs were destroyed and rewards were paid for their capture amounting to Rs. 30,812. This return does not give the entire number of these wild animals killed, as in many cases the reward is not claimed or the skin gets spoiled before it can be taken in or the animal perishes in some place where it is not possible to follow it and obtain evidence of its death. From a return of inquests held in Garhwál between 1850 and 1863, the number of deaths from the attacks of wild animals was recorded at 276 during that period, and Rs. 13,784 were paid as rewards for the destruction of 91 tigers, 1,300 leopards and 2,602 bears. Taking the decade 1870-79, the returns show that 211 persons (123 males) were killed by wild animals and Rs. 9,317 were paid as rewards for destroying 62 tigers, 905 leopards and 1,740 bears. A similar series of returns for the Taráí district show that between 1867 and 1869 the mortality from the attacks of wild animals amounted to 54. Between 1871 and 1879, the deaths of 289 persons (157 males) were recorded and Rs. 357 were disbursed in rewards for the destruction of 43 tigers, 43 leopards and 4 bears. In many cases, however, the reward was not claimed, and the returns must be considered as only approximate. The statistics of the Dehra Dún district for the years 1875-79 show the deaths from the attacks of wild animals to be 34, the majority of which were caused by wild elephants. During the same

¹ Mr. Traill writes thus of Nágpur in Garhwál (26th June, 1818):—"While the rest of Kumaun everywhere exhibits an astonishing increase of cultivation, this pargana remains a solitary instance of non-improvement; the causes of this are to be found in the ravages annually committed thereon by tigers, a circumstance which, while it prompts the desertion of existing villages, prevents the occupation of new. The tigers in this province are formidable rather from the nature of the country than from their numbers."

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five years Rs. 647 were disbursed on account of the destruction of 30 tigers, 53 leopards, 25 bears and 4 wolves. In the appendix will be found a detailed account of the number of persons killed and animals destroyed in each district for five years. This return is avowedly imperfect, as it only includes the deaths reported to the authorities and the animals killed for which rewards have been claimed.

Felis pardus, Linn.; *leopardus*, Schreb.—Pard, panther, leopard—*Goldár, baghera, lakar-bágha*. Jerdon, 97.

It is still a matter of discussion whether there are two distinct species of leopards, for it is difficult to believe that the insignificant cat-like, round-headed little animal of from 5'-6' in length is the same as the powerful, handsome panther measuring 7½'-8' and almost as bulky as a small tigress. A specimen 7'9" long took the united efforts of three strong men to place it on an elephant. In the hills, at least, the larger variety does not appear to be slighter in build than the smaller, still there is some ground for the statement that the larger variety is the more slender even there. A specimen procured in the Pátli Dún appeared to be a very different form from that observed in the western Himálaya. It was taller than the ordinary leopard, very slightly built, had a rather long head and was very savage. It is, however, very uncommon. The ordinary leopard, both the large and the small variety, is very common all over the hills and in parts very destructive. The natives kill a great number in dead-fall traps baited with a dead sheep, goat or dog. In western Garhwal they use a trap that catches the leopard alive and which is much better in every way, as there is no fear of killing dogs in it, and a live bait is used which is quite safe from the leopard. This trap consists of a narrow passage built with big stones with a rough frame-work of wood at the entrance, in which is fitted a sliding bar to serve as a door. At the other end of the trap is a small space for the kid or puppy; and this is partitioned off by a stone slab with holes bored in it. The sliding bar is raised and then the trap is set in exactly the same manner as the dead-fall trap. The leopard creeps in to attack the bait, the door falls down behind him, and he is at once secured in such a cramped position that he is unable to exert his strength in trying to get free and remains there until the trapper kills him. The leopard is particularly fond of dogs and has been known to carry

them off in broad daylight from houses in Naini Tál and Almora and in the evening from the public roads in presence of the owners.

Felis Uncia, Sch. ; *uncioides*, Hodg. ; *Irbis*, Ehr.—Ounce, snow-leopard—*Barhal-hai*. Jerdon, 101.

The snow-leopard is nowhere common to the south of the snowy range, but there are generally one or two on all hills where the blue sheep (*Ovis Nahura*) are found. As a rule they do not frequent the wooded parts of the hills, though a female and two cubs were procured in the forest near Jhála in the Bhágirathi valley. The ounce feeds on the blue-sheep, musk-deer and other animals found near its haunts, and it will kill domestic sheep and goats if it finds the opportunity for catching a stray one. It is a very timid animal and in these hills does not appear to carry off dogs. The fur is of a pale-yellowish ground with dark gray marks all over the body except on the stomach which is pure white. The skin is rare and valuable.

Felis viverrina, Benn. ; *viverriceps*, Hodgs. ; *celidogaster*, Tem. ; *himalayana*, Jerd.—Large tiger-cat—*Jangli-billi*. Jerdon, 103.

A fine specimen of this powerful cat was procured at the foot of the hills in western Garhwál, but it is very rare.

Felis bengalensis, Desm. ; *nipalensis* and *pardichrous*, Hodgs.—Leopard cat—*Baghera-billi*. Jerdon, 105.

This very handsome cat is found all over these hills at elevations 6-11,000 feet up to the limits of forest. It does not appear to frequent the lower ranges or the jungles of the submontane tract. Its principal food is rats and mice, but it is also very destructive to young birds of all kinds, particularly to young pheasants. It is a good climber and always seeks a tree when pursued by dogs. The markings seem to vary with the locality and its altitude and differ much in specimens from the same district. It is doubtful whether *F. aurata*, Tem. (*F. moormensis*, Hodgs.), the bay cat (Jerdon, 107), occurs west of the Káli.

Felis Chaus, Guld. ; *affinis*, Gray ; *Lynchus erythrotis*, Hodgs. ; *Chaus lybicus*, Gray—Common jungle-cat—*Ban-billi*—Jerdon, 111,

and Blyth's note on wild types of the domestic cat. J. A. S., Ben., XXV., 439.

This cat is very common in the forests of the submontane tract and in the hills of the lower range up to 6,000 feet. It lives in grass or high crops, such as sugarcane, maize, and the millets, and feeds on rats, mice, birds, and leverets. It produces its young above ground in thick cover and does not frequent caves or holes. It breeds twice a year, producing two or three young at a birth. A kitten of this species grew up to be a very tame and affectionate pet. When first secured it was kept alive by forcing goat's milk down its throat with a spoon and afterwards a few bits of cooked meat were placed on a saucer with the milk, and it would then take a bit of the meat in its mouth and suck the milk through the meat. It never attempted to lap like the young of the domestic cat. There is a black species unnoticed by Jerdon, not uncommon in the forests of the submontane tract below Garhwál. At a distance of 15-20 paces it looks quite black, but on closer inspection its colour is blackish brown with indistinct dark spots, the tips of the hairs being black. It is about the size of the common jungle cat and a true *Felis* in regard to its rounded head, short and strong jaws, cutting teeth, powerful limbs, and retracted claws. Mr. Greig has seen four specimens and is in possession of the skins of two.

Felis Caracal, Sch.; *Caracal melanotis*, Gray—Red lynx—*Siyáh-ghosh*. Jerdon, 113 : Blyth, J. A. S., Ben., XI., 740.

The red lynx has been found in the Dehra Dún and probably exists in the forests below the Garhwál and Kumaun hills, which are of a character similar to those of the Dehra Dún and are only separated from them by the Ganges.

VIVERRIDÆ.

Hyæna striata, Zim.—Hyæna—*Bhagiár, lakar-bágh*. Jerdon, 118.

The hyæna is common in the submontane tract, but it seldom enters these hills. Below the hills it frequents broken, raviny ground where there is plenty of cover, sometimes in forest and sometimes in thorny jungle, and sandy watercourses where there is plenty of long grass. It is a skulking cowardly animal and never shows fight, even when wounded, if it has strength left to crawl away. It is said to be very partial to donkeys and dogs and

will kill domestic sheep and goats if it comes across stray ones, but its principal food is carrion and old bones. It is almost quite nocturnal in its habits, leaving its lair at dusk and returning before break of day. In the Panjáb, it is found in the hills at Sabáthu, Dagshái, and Kasauli.

Viverra Zibetha, Linn. ; *V. orientalis, melanurus* and *civettoides*, Hodgs.—Large civet-cat.

This civet yields the drug of that name and is said to occur in the Tarái and hills. See Hodgson's description, Cal. J. N. H., II., 47, 61 ; Jerdon, 120.

Viverra malaccensis, Gmelin ; *V. indica*, Geoff. ; *V. pallida*, Gray ; *V. Rasse*, Horsf.—Lesser civet-cat. Jerdon, 122.

This civet-cat is very common in the scrub jungle all along the submontane tract, but it seldom enters the hills. It is generally found in the thorny thickets of the jujube (*ber*) or in grass jungle or sandy ground where rats are numerous. It has an exceedingly strong scent, and dogs are very fond of hunting it. The civet, though occasionally extracted, is of little value.

Prionodon pardicolor, Hodgson (Cal. J. N. H., II., 57, and Jerdon, 124), the tiger spotted civet, does not appear to occur in Kumaun, though found in Nepál, where it is said to be common.

Paradoxurus Bondar, Gray ; *P. hirsutus*, Hodg.—Tarái tree-cat Jerdon, 128, Hodgson, As. Res., XIX., 72.

This tree or bear-cat is said to be found throughout the Tarái below the hills extending into Bengal and Behar. There are two other allied species, apparently undescribed, which have been procured by Mr. Greig. Of one he has seen five specimens and describes it as about 40 inches long, the tail being about half that length and very broad at the base : colour, a fine, bright dark grey throughout, with the exception of the feet and ears, which are black. This species is generally found in pairs. It climbs trees well and seems extremely fond of apples and other fruit. It has been procured at Binsar and in Naini Tál and as far west as Kulu. In shape it resembles an otter : hence its vernacular name *Ban-áid* (forest-otter) in Kulu and *khar-áid* (grass-otter) in Kumaun. Of the second species Mr. Greig procured a single specimen of a female at Naini Tál which was of a much duller gray ; its tail was shorter and at

the base not more than half the breadth of the tail of the former, and it had altogether a different appearance.

Paguma laniger, Gray, the *Martes laniger* of Hodgson, found in Tibet and the adjoining snowy region of the Himálaya and procured in Nepál; may occur in Kumaun. Jerdon, 129.

Herpestes malaccensis, Cuv. ; *H. Nyula*, Hodgs.—Bengal mungoose—*Nyála*. Jerdon, 134

This little animal is found in the submontane tract and Dehra Dún and is replaced in the hills by the next.

Herpestes nipalensis, Gray ; *H. auro-punctatus*, Hodgs.—Gold-spotted mungoose. Jerdon, 136.

This species is found all over the lower Himálaya from Sikkim to Kashmir and also in the submontane tract.

CANIDÆ.

Canis pallipes, Sykes—Wolf—*Bheriya*. Jerdon, 139.

The wolf is found throughout the submontane tract and in the Dehra Dún, where a reward is given for its destruction. It does not seem to enter the hills.

Canis aureus, Linn.—Jackal—*Gidhar*, *shiyál*. Jerdon, 142.

Jackals are nowhere more common than in the Tarái and the scrub jungle along the foot of the hills. They ascend the valleys communicating with the plains, but are seldom found above 6-7,000 feet. Their ordinary food is carrion, but they kill a great many young deer and often catch pea-fowl and are very fond of maize. They are very persistent in following a wounded deer, but they rarely venture near it until it is so exhausted as to be obliged to lie down. One seen pursuing a wounded doe antelope was observed to bring her to bay several times, but it never dared to touch her until she fell exhausted by the loss of blood from her wounds. On another occasion two jackals were pursuing a ravine deer, but they never attempted to fix it until it had fallen. Two hounds were, on another occasion, worrying a jackal when suddenly another came up and joined them in tearing the animal to pieces. The dogs did not seem to notice the stranger and he did not appear to be afraid of them. It was not until the master of the dogs showed himself that the jackal left off his task and slunk away, whilst the dogs showed

no desire to follow him. Jackals frequently go mad and are then more dangerous than mad dogs, as they attack all living beings that they meet. Their fur if taken in December-February and properly cured makes excellent carriage rugs. It is very difficult to capture them as they will not enter any description of box trap no matter how skilfully baited, and they are not often caught in dead-fall traps. The gin-trap when skilfully used is alone successful.

Cuon rutilans, Tem.; *C. primævus*, Hodgs.; *C. dukhunensis*, Sykes—Wild-dog—*Bhaunsa*; *hási* (Tibet). Jerdon, 145.

The wild-dog is found in all parts of the hills between the Tons and the Sárda, and, whether they have increased in numbers or not of late, are now included in the list of animals for whose destruction the State pays a reward. They live chiefly on deer and their favourite prey is the *sámbar*, which is more easily run down than other deer. They kill a good number of cattle where deer are scarce and appear to hunt by scent just like a pack of hounds. They have very powerful jaws, and when they bring an animal to bay, they continue to spring at its hind quarters and stomach, taking out a mouthful at each bite, until the beast drops from exhaustion, when they go in and soon leave nothing but the bones. A dozen of them have been known to eat up a full-grown *sámbar* in little more than five minutes. In the valley of the Bhágirathi they are sometimes found close to the snows, hunting the blue-sheep (*barhal*). The wild-dog is of a bright rusty-red colour with black tips to his ears and tail, height about 19 inches, length of body 35 inches and of tail 16 inches. Mr. Greig notes the existence of another wild dog in Kashmír which has apparently not been noticed by Jerdon. He describes it as not so large as the *bhaunsa* and of exactly the same colour as a jackal. As many as twenty hunt together in a pack, uttering a snarling, cackling noise when disturbed. They prey on the ibex and musk-deer and do not disdain to eat carrion, having been seen to feed on the carcase of a bear from which the skin had been taken the previous day. Mr. Wilson has noticed that during the breeding season the wild-dog will drive its prey towards its lair before closing in and killing it, evidently in order to save itself the trouble of conveying the carcase to its young. See Hodson's paper in Cal. J. N. H., II., 205, and Campbell's note on the osteology of

the Canidæ in *Ibid*, 209. Kinloch gives a photograph of a head, p. 17.

Vulpes bengalensis, Shaw.; *Cuonchrysurus, xanthurus*, and *rufescens*, Gray; *C. Kokree*, Sykes—Indian fox—*Lomri*. Jerdon, 149; Blyth's note, J. A. S., Ben., XXIII., 279.

This pretty little animal is only found occasionally in the Taráí and low country at the foot of the hills. It does not appear to enter the hills, where it is replaced by the following. It is easily tamed if taken young and makes a faithful, affectionate pet.

Vulpes montanus, Pearson; *V. himalaicus*, Ogilvy—Hill fox—*Kuniya shiyál* (Kumaun); *wámu* (Nepál); *loh* (Kashmír). Jerdon, 152.

This handsome fox is found all over the hills from the Tons to the Sárda, 4-12,000 feet. Its principal food is rats and offal, but it will take poultry when it has the opportunity, and doubtless constantly kills young pheasants and partridges. It is a very poor runner on level ground, and even on open hill sides an ordinary half-bred greyhound can easily catch it. It carries a very fine fur and its skin is in great demand for making rugs.

DELPHINIDÆ.

Platanista gangetica, Lebeck—Gangetic porpoise—*Sús*. Jerdon, 158.

This porpoise is said to have been captured at Hardwár.

SCIURIDÆ.

Sciurus palmarum, Gmelin; *S. penicillatus*, Leach—Common striped squirrel—*Galheri*. Jerdon, 170.

This little squirrel is found throughout the submontane tract and Dúns, ascending the lower valleys to a short distance.

Pteromys petaurista, Pallas; *P. Oral*, Tickell—Brown flying squirrel—*Kartuwa-kiural*. Jerdon, 174; Tickell, Cal., J. N. H., II., t. 11.

This curious squirrel is common in all large forests in the hills above 5,000 feet. It feeds on walnuts, hazel-nuts, acorns, and the bark and tender shoots of many trees. It is quite nocturnal in its habits, living in hollow trees during the day and coming out to feed

at dusk. A bonfire in the forest will bring numbers to the neighbouring trees at dusk. Its fur is very good, but the skin is so very fine that it is difficult to cure it without tearing it. It travels about the forest by climbing to a top of a tree and then sailing off downwards in a diagonal direction to another some thirty or forty yards off. It rarely descends to the ground. It is very timid and can easily be tamed.

Pteromys inornatus, Geoff.—White-bellied flying squirrel. Jerdon, 176.

This squirrel occurs in situations similar to the preceding, 6-10,000 feet, and has frequently been procured near Landour and in Kumaun.

Arctomys hemachalanus, Hodg.; *A. Bobac*, Sch.; *A. tibetanus*, Hodg.—Tibetan marmot. Jerdon, 181.

This marmot is found all along the perpetual snow line in places which are suitable for its burrows. Mr. Greig notes that he has seen marmots in such places that would answer to the description of either Jerdon's Tibetan marmot or his red marmot, sitting side by side and sometimes a black one along with them, so that it is probable Blandford has been right in uniting them. They live at an elevation 12-16,000 feet and emerge from their burrows in May, when the snow melts. Their food consists of roots and vegetables, but it is not known for certain whether they hibernate during the winter or store up a sufficient supply of food to last them for the six months during which they are snowed up. For synonymy see J. A. S. Ben., XII., 410, and XLIV., ii., 122, containing Blandford's review of the genus.

MURIDÆ.

Mus Blythianus, And. *Nesokia indica*, Blyth—Indian mole-rat. Jerdon, 187; Anderson in J. A. S., Ben., XLVII., ii., 227.

This burrowing rodent has been procured in Dehra Dún, where it does considerable damage in the plantations.

Mus Hardwickii, Gray—Short-tailed mole-rat. Jerdon, 190; Anderson, J. A. S., Ben., XLVII., ii., 221.

Occurs doubtfully in the Dún, ascending the lower hills.

Mus decumanus, Pallas—*M. norvegicus*, Buffon. Brown-rat. Jerdon, 195.

Common everywhere in the hills and plains.

Mus plurimammis, Hodg.—Nepál-rat. Jerdon, 196 : Hodgson, *Ann. Mag. Nat. Hist.* l. c.

This species occurs in the Tarái and adjacent plains.

Mus brunneus, Hodg., *M. nemoralis*, Blyth.—Tree-rat. Jerdon, 198, Hodgson ; *Ann. Mag. Nat. Hist.*, XV., 1st Ser., 266.

This rat occurs commonly in houses and near cultivation.

Mus niviventer, Hodg.—White-bellied house rat. Jerdon, 200 ; Hodgson, l. c.

Specimens of this rat have been procured from Mussooree and Naini Tál.

Mus oleraceus, Sykes ; *M. dumeticola* and *povensis*, Hodg.—Long-tailed tree-mouse. Jerdon, 202.

This pretty small mouse is commonly found in the thatch and amongst the beams of houses from the hill southwards.

Mus homourus, Hodg.—Hill mouse. Jerdon, 204.

This is the common mouse of hill stations from the Panjáb to Darjiling.

Mus crassipes, Blyth—Large-footed mouse. Jerdon, 204.

Procured from Mussooree.

Mus Tytleri, Blyth—Long-haired mouse. Jerdon, 205.

Specimens of this mouse have been procured from Dehra Dún.

Leggada Jerdoni, Blyth—Himálayan spiny field-mouse. Jerdon, 209.

This species occurs at high elevations throughout the hills. Procured from Darjiling and Kunáor.

Rhizomys Badius, Hodgson.—Bay bambu rat. Jerdon, 214.

This rat is said to have been procured in the upper Pattis of Kumaon. See Hodgson's description, *Cal. J. N. H.*, II., 60.

Arvicola Boylei, Gray.—Himálayan vole. Jerdon, 216.

This vole has been procured at high elevations in Western Garh-wál and from Chini in Kunáor.

HYSTRICIDÆ.

Hystrix Leucura, Sykes; *H. cristata indica*, Gray; *H. zeylanensis*, Blyth—Indian porcupine—*Saki*. Jerdon, 218.

The porcupine commonly occurs throughout the submontane tract and in the hills up to 8,000 feet. In the level country at the foot of the hills it make its own burrows, and when beating with elephants through long grass, the presence of these burrows is felt when the elephant sinks into one up to his chest and gives itself and its rider a troublesome shake. In the hills the porcupine makes its home in natural caves and crevices in the rocks. It is nocturnal in its habits and a great pest to potato-growers, gardeners, and cultivators generally. The best way to kill it is to find its cave and suffocate it by burning wetted straw in the entrance. It may also be taken in the ordinary dead-fall trap (*jiwala*) baited with mango-stones, potatoes or beet-root and the like. If caught in the gin trap, it generally bites off the trapped leg and escapes. It has the power of throwing its quills with great force, but is not able to direct them. In one case a porcupine pursued by terriers raised his quills and expelled a dozen or more with such force that two of them were picked out of a tree close by at more than three feet from the ground. These had pierced through the bark and were tightly fixed in the wood. They frequently injure dogs severely, but the wounds usually heal without festering. Natives are very fond of porcupine's flesh and young ones make excellent curries, and baked in a paste of flour they are very delicately flavoured. For European tastes, however, the adult animal is somewhat rank and coarsely flavoured.

LEPORIDÆ.

Lepus ruficaudatus, Geoff; *L. indicus* and *macrotus*, Hodg.—Common Indian hare—*Kharghosh*. Jerdon, 224; Hodgson, J. A. S., Ben., IX., 1,183; XVI., 572.

The hare occurs throughout the submontane tract and outer ranges up to 7,000 feet and has been procured on Badkot above 8,000 feet. It is doubtful whether *L. hispidus*, Pearson, the hispid hare of the *sal* forests of the Gorakpur submontane tract, extends as far westwards as Kumaon: see Hodgson, *l. c.*

Lagomys Roylei, Ogilvy; *L. nipalensis*, Hodg.; *L. Hodgsoni*, Blyth.—Himalayan mouse-hare—*Kang-dúni* (Kunáor). Jerdon, 226: Hodgson, J. A. S., Ben, X., 854.

An ordinary observer would not take this tailless rat-like animal for a hare. In appearance it is like a guinea-pig, but much smaller and is very common on all the upper hills at the edge of the forest at 9-16,000 feet.

ELEPHANTIDÆ.

Elephas indicus, Cuv.—Indian elephant—*Háthi*. Jerdon, 229.

At the present time there are about 150 wild elephants in the tract between the Sárda and the Ganges, and about 50 in the Dún and Siwálik tract between the Ganges and the Jumna. They do much damage to the cultivation on the border of the forest, and the number of young trees and bambus destroyed by them is very great. In former years, elephants were caught in pits (*ogi*), but these caused such loss of cattle that the practice was prohibited in 1817. Subsequently it was ordered that all pits should be destroyed and that any elephants found in them should be confiscated and sold on behalf of Government, and any person, in future, digging pits for the purpose of catching elephants should not only be fined, but also be held liable for any loss that ensued.¹ The annual cess levied on the capture of elephants never exceeded one thousand rupees in any year, whilst the grazing dues in the tract between the Rám-ganga and the Sárda exceeded thirty thousand rupees. The relative value of the two sources of revenue, therefore, offered no inducement to continue permission for the establishment of elephant pits, and the difficulty found in procuring redress for losses caused by cattle falling into the pits led to the strict enforcement of the rule forbidding their excavation. Looked on in another point of view, the pit system of catching elephants was highly uneconomical, as fully three-fourths of the animals captured were either fatally or seriously injured. Accordingly, in 1824, several elephants found in pits were seized and sold, and the proceeds were credited to Government. In 1827, the restriction was removed, and rules were framed for the digging of pits and the collection of dues on

¹ To Board, dated 7-12-18. From Mr. Shore, dated 14-3-27.
 " ditto, 30-5-21. " Government, " 19-4-27.
 " ditto, 21-3-27. " ditto, " 21-6-27.
 " ditto, 22-5-27.

the capture of elephants, which subsequently received the sanction of Government. But little advantage, however, accrued from this permission to either the persons engaged in catching the elephants or to Government. After the mutiny, for some time, a regular *kheddah* was established at the foot of the hills for the purpose of catching elephants for the public service, but was soon abandoned. By a recent Act of the Legislative Council no one is allowed to kill or capture an elephant without special permission of the local authorities. In 1873, the Maharaja of Balrampur captured thirty head, and in 1879 he secured twenty-eight head. The plan of driving the herds into fenced enclosures is not practised here, where the system is either to run the wild elephants down in the open and lasso them, or to surround them in a gorge by placing fifty or sixty tame elephants in a narrow place where the hills on either side are precipitous and then drive down towards them the wild herd. The men engaged in driving are armed with guns or they beat drums and cymbals and blow horns and keep up a perpetual din. So soon as the wild herd approaches near enough, the tame elephants are rushed at them, and if the ground be favourable and the *kheddah* be well managed very few, except the large males, escape. The tame elephants have a rope securely fastened around their necks, to which is attached a second rope ending in a running noose. Five or six of them surround and hustle the wild animal until the *phanets* (noose-men) are able to attach at least two of the nooses, when the remainder retire whilst the wild elephant commences the series of struggles that ends in its complete submission. The running noose is then loosened and so tied that it cannot slip and strangle the captive. It is only where there is not much scrub or jungle that the attempt to run down wild elephants in the open ever succeeds. In favourable places the wild animal is captured after a fair chase of about a mile.¹

Solitary old males are sometimes met with, and are very dangerous to those who have to frequent the haunts affected by them.

¹ An account of elephant shooting and elephant catching in Dehra Dún will be found in Danlop's 'Hunting in the Himalaya,' London, 1860. From the same work the following vocabulary of the mahants or elephant-drivers is taken:—'Mail' (pronounced, 'mile,') 'get up' or 'go on': 'baith,' 'sit down': 'dut,' 'stop': 'dut-dut,' 'go backwards': 'dug,' 'step over': 'lamb dug,' 'take a long step': 'sarath': 'break': 'beri' 'let go' or 'stop feeding': 'ohai,' 'turn' and 'chai-dut,' 'turn round.' These phrases are in common use by elephant-drivers all over the North-Western Provinces.

In the Dún, where they appear to be more numerous, the pathways made by them may be easily recognized, being on plain land about four feet wide and on hilly ground about half that width, well-marked, and bearing the signs of having been formed by some animal of great weight.

SUIDÆ.

Sus indicus, Sch.—*S. Scropha*, Linn.; *S. vittatus*, Schl.—Wild pig—*Súwar, janaur*. Jerdon, 241.

The wild pig occurs in numbers throughout the tract between the Tons and the Sárda from the plains up to 10,000 feet. In the lower hills they are to be found in every place where there is good cover, and in the upper hills in the oak forests especially. They feed on acorns, wild fruits, and roots, but also do much damage to sugarcane, maize, and rice, when opportunity occurs. Occasionally they eat carrion. An old wild boar is the most fearless of all wild animals. No leopard dare attack him, and he has been known to beat off a tiger; whilst men, and elephants even, are often attacked by him without having given any provocation. As a rule, the largest boars are found far up in the oak forests. See Hodgson in J. A. S., Ben., XVI., 423.

Porculia salvania, Hodgs.—Pigmy hog. Jerdon, 244 : Hodgson, J. A. S., Ben., XVI., 573.

This miniature pig is of a blackish brown colour and seldom weighs more than ten pounds. It occurs in the Tarú and is greatly prized by the Bhuksas and Thárus, but is nowhere very common.

CERVINÆ.

Rucervus Duvancelii, Cuv.: *elaphoides* and *Bahráiya*, Hodgs.; *euryceros*, K. M.—Swamp deer—*Gond*. Jerdon, 254.

The swamp deer was formerly very plentiful all through the Tarú, but the clearances of the last quarter of a century have reduced its numbers considerably. It is now seldom found west of the Dhabka river except in the eastern Dún of Delra, and even between that river and the Sárda is nowhere common. It chiefly affects swampy ground well covered with reeds and tall grass, hence the ordinary name; but it is also found at certain seasons in

dry tracts where there are patches of long grass along the edge of the *sdl* forests. The stags shed their horns in March, and few are seen with them after the 1st of April. The horns are particularly handsome, carrying from ten to fifteen or more points. See Hodgson's note, J. A. S. Ben. V., 240.

Busa Aristotelis, Cuv. : *hippelaphus, equinus, Leschenaultii*, Cuv. : *Jarai* and *heterocercus*, Hodgs. : *Saumur*, Ogilby—Sambhar, sámbar—*Jarau*. Jerdon, 256 : Hodgson, J. A. S. Ben., I., 66, 115.

The sámbar still exists in nearly all the great forests from the plains up to 10,000 feet, but in very small numbers compared with twenty years ago. It is the finest of the deer tribe, and is much prized by sportsmen for its magnificent horns and the difficulty in obtaining them. Those that permanently frequent the upper hills possess more massive horns and thicker and longer hair, and are more robust in build than those found in the lower hills and the Tarái. In the rains they descend from the lower hills and return when the grass dries up in April. Very few remain permanently in the Tarái. Natives run down a large number every year with dogs, and when snow is on the ground the deer are soon caught, but at other times they generally run a mile or two before being brought to bay. When hard pressed, the sámbar always runs down the hill and makes for water : the dogs then surround it and keep it at bay until the hunters arrive. The sámbar affords good sport to a hunter on foot, as it has very keen powers of sight, scent, and smell ; but to the hunter mounted on an elephant it falls an easy prey, being so accustomed to wild elephants as to feel no alarm on the approach of a tame one. Each horn has three tines including the brow antler and two at the top of the beam. The horns are shed during May and the rutting season occurs in October-November.

Axis maculatus, Gray : *major* and *medius*, Hodgs. : *Cervus Axis*, Erx. : *C. nudipalpebra*, Ogilby—Spotted deer—*Chital*. Jerdon, 261.

Hodgson has distinguished two varieties of this species under the names *A. major* and *A. medius*, but this difference requires confirmation. The spotted deer is the most common of all its tribe found in the forest along the foot of the hills. When the jungle is dense it occurs in herds of from ten to twenty, but when the grass

has been burned down it crowds together for mutual protection, and herds numbering several hundreds may be seen. These are very difficult to approach and easily alarmed. The spotted deer is nowhere to be found north of the second range of low hills. The stags shed their horns at irregular times from October until March, chiefly, however, in October-November. The rutting season is equally irregular, since the stags commence to rut so soon as their new horns are perfect. Each horn has three tines, the brow antler and two at the extremity of the beam, like the sámbar, and frequently 'sports' occur at the base of the brow antler.

Hyelaphus porcinus, Zim.: *Cervus oryzeus*, Kel.: *Dodur*, Boyle: *niger*, Bach. Hog-deer—*Pára*. Jerdon, 262.

The hog-deer is found within the same limits as the spotted deer, from the jungles along the foot of the Himálaya to the second range of low hills. It affects grassy swamps or grass jungle along the banks of streams, and only retires into forest when much disturbed. It affords excellent sport for elephant beating, for none but a skilful shot could secure a hog-deer as it dashes across a small opening in the forest when running away. The rutting season occurs October-February, and the horns are shed in March and early April. The horns are like those of a sámbar in miniature, except that they generally curve in more towards the tip.

Cervulus aureus, Ham.; *C. vaginalis*, Bod.; *C. Ratwa*, Hodgs.; *C. styloceros*, Ogilby; *C. albipes*, Wag.; *C. Muntjac*, Elliot; *C. moschatus*, Blain.; *Muntjacus vaginalis*, Gray. Barking-deer—*Kákar*. Jerdon, 264.

The rib-faced or barking-deer is common throughout the tract between the Tons and the Sárda up to 10,000 feet, wherever there are extensive forests. Its hard bark is constantly heard at all times of the day and night, but being a very poor runner on level ground, it seldom ventures out into the open. It is generally a solitary animal, except during the rutting season, when two or three may be seen feeding together. The upper jaw of the male is armed with two formidable tusks, with which it can inflict very severe wounds. Cases are known in which dogs have been killed or severely wounded by the male *kákar*. Colonel Markham says that "as it runs a curious rattling noise may often be heard like that

from two pieces of loose bone knocked together sharply," but it would appear that this phenomenon is confined to the female. The males shed their horns in May and rut during October-November. The barking deer is quite helpless in the snow, and consequently great numbers are killed every year. The venison is seldom fat, but is very good if hung up for a few days before being cooked.

Moschus moschiferus, Linn. ; *M. saturatus*, *chrysogaster* and *leucogaster*, Hodgson. Musk-deer—*Kastúra*, *bena*, *raus*. Jerdon, 266.

The musk-deer is found in the upper ranges from 8,000 feet to the limits of forest, but it is so much sought after for its valuable perfume-bearing pods that it is now becoming rare all through these hills. The pods and even the dung of this deer smell strongly of musk, though its flesh is not in the least tainted and makes very good venison. The female has no musk. An ordinary pod weighs about two tolas, but sometimes they are twice that weight, and are worth from ten to fifteen rupees per tola. The more common variety of the musk deer is of a brownish grey colour varying in shades on the back where it is darkest. The hair is coarse and very brittle so that it is difficult to obtain a good skin. Musk-deer are nearly always solitary and are only found in the forest, where they prefer rocky, precipitous ground. They are very active and sure-footed, and bound from ledge to ledge with the most graceful facility. Both sexes are destitute of horns, but the males have long slender tusks in the upper jaw (about 3 inches long) that grow downwards and then slightly backwards. The musk-deer is one of the smallest of its family being seldom more than twenty inches high at the shoulder. It is frequently taken in a simple snare by the hill-men, who, for this purpose, make a low hedge along the ridge of a spur sometimes a mile in length or more and just sufficiently high and thick to tempt the game to save themselves the trouble of jumping or flying over. Openings are left in the hedge at intervals of thirty feet in which the snares are set. These are laid flat on the ground, the upper end being attached to a stout sapling bent over so as to form a strong spring. When the musk-deer approaches the hedge, he turns aside until he discovers an opening, through which he walks and puts his foot in the snare. The end of the sapling is thus released and instantly springs up,

suspending the deer by the leg. Many pheasants are captured in these snares in the same manner. See Hodgson's notes, J. A. S., Ben., VIII., 202 : X., 795 : Kinloch gives a photograph of a head, 41.

ANTILOPINÆ.

Portax pictus, Pallas ; *Damalis Risia*, Smith ; *Tragelaphus kippelaphus*, Ogilby. Blue cow—*Ntl-ydi*. Jerdon, 272.

The *ntl-ydi* is only found in certain patches of forest along the foot of the hills, and usually close to cultivation. It does much damage to young wheat, and no ordinary fence will keep it out. The female has no horns, and gives excellent venison or rather beef.

Tetraceros quadricornis, Blain. : *iodes* and *paccerois*, Hodgs. : *striaticornis*, Leach : *Antelope Cläckara*, Hard. : *sub-quadricornutus*, Elliott—Four-horned Antelope—*Chausingha*. Jerdon, 127 : Hodgson, Cal. J. N. H., VIII., 88.

This graceful little animal is found throughout the low plateaux and hills covered with *säl* forest and the dry jungle between them and the Taräi. It is generally seen alone or in pairs. It does not seem to suffer from the heat, for except during May-June it never seeks a shady place to lie in, and is usually found in a patch of grass or a *ber* (*Z. Jujuba*) bush, and in the hills it frequents grassy glades in the forest. It is a rather difficult animal to hit as it bounds away. The two pairs of horns are quite separate from each other ; the posterior pair are 4"-5" long and the anterior pair 1"-2." The female has no horns. It rarely carries any fat, and the venison is poor and dry.

Antelope cervicapra, Pallas ; *A. bezoartica*, Ald.—Indian Antelope—*Haran*. Jerdon, 276.

The Indian antelope commonly known as the black-buck occurs only in the tract along the southern boundary bordering on the plains. It is found in open plains or in low grass or light scrub jungle and rarely enters the forest. The horns of those found in this division are small, eighteen inches being rather above than under the average. See on the synonymy, Blanford in J. A. S., Ben., XLIV., ii., 18.

Nemorhædus bubalina, Hodgson; *Antilope Thar* and *N. proclivus*, Hodg.—Forest goat—*Táhr, sarau, ainu*. Jerdon, 284.

The *sarau* is found in most of the rough, rocky hill forests 3,000-9,000 feet. It affects precipitous, densely-wooded places, is solitary in its habits, and is rarely seen in the open except at dusk and daydawn. It is a very fierce animal when brought to bay by wild or tame dogs, and generally succeeds in killing one or two with its short, sharp horns. Its flesh is very coarse, strong, and unpalatable. The horns of both males and females are 9"-10" long, tapering to a point and curved backwards. The skin is very tough and strong and makes good leather. Although it has an awkward gait, it can cross precipitous ground with great ease and descend slopes with marvellous rapidity. The female produces one kid, generally in March-April. For Hodgson's description see J. A. S., Ben., IV., 489.

Nemorhædus Goral, Hard.; *Antilope Durauceli*, Smith: *A. Ghoral*, Hodg.—Himálayan chamois—*Gural*. Jerdon, 285.

This pretty animal is found throughout the outer ranges 3,000-9,000 feet. Both sexes have horns; those of the male are 6"-9" long and those of the female are 4"-6" long and considerably thinner. They generally occur in parties of three and four, but where they are abundant herds of ten and twelve are met with. The largest males are usually solitary. They feed up to 9-10 A.M. and again from 2-3 P.M. during the hot weather, but in the cold weather they wander about all day. Chamois shooting is the best possible practice for the young sportsman, enabling him to learn stalking, to walk across steep ground, and to use his rifle satisfactorily. The female produces her young, generally one, though sometimes two, during April-May. A kid, if caught when young, makes a very tame and amusing pet. For Hodgson's description see J. A. S., Ben., IV., 488.

Hemitragus jemlaicus, Smith; *Capra Jharal* and *C. quadrimammis*, Hodgson—Himálayan wild goat—*Tehr, jula* (male), *jháral*. Jerdon, 286.

This true wild goat is found in the most precipitous parts of the upper Himálaya, 7,000-12,000 feet, though it also occurs at 6,000 feet in suitable places. Those found at low elevations are called

'*khar-tehr*' by the hill men : they are exactly the same as the others, but do not possess such fine coats nor such long horns. Both sexes have horns, but those of the female are neither so massive nor so long as those of the male. The horns touch at the base and are sub-compressed, sub-triangular and curve backwards considerably. Those of the male measure 10"-15" along the curve and are 9"-12" in circumference at the base. The rutting season commences about the second week in October and the young are produced in April-May. The oldest males will be found close up to the snow-line in August-September and the females are often seen above the forest limit. As the snow falls they descend to the valleys, but never leave the precipices except to graze on grassy slopes close by. To enjoy *tehr* shooting a man must be an expert cragsman and must have a very good head. The ground affected by them is always very dangerous, and no one should venture on it without a good guide. For Hodgson's description see J. A. S., Ben., IV., 491.

Ovis Nahura, Hodgson; *O. Nahoor*, Hodg.; *O. Burhel*, Blyth—Blue wild sheep—*Barhal*. Jerdon, 296.

This wild sheep is very plentiful about Níti and Laphkhel, and there are a few at the head of the Pindar river and some are said to occur in the Dárma and other valleys to the eastward. They frequent the grassy slopes and rocky ground between the upper limit of forest and the snow-line 10,000-16,000 feet. The old males leave the females from June until September and live by themselves in parties of three to twelve or more. In October they begin to join the females and in November their rutting season commences. The lambing season occurs in May-June. The old males are very fat in September-October and then yield excellent venison. *Barhal* shooting gives fine sport, but entails hard walking and often very difficult climbing. Both sexes possess horns; those of the male measure 20"-30" along the curve and 10"-13" around the base. The female is a smaller animal than the male, and has small, depressed horns only slightly recurved. The bluish-brown coat of the old males, with its band of jet black on the lower part of the neck and chest and along the flanks and its pure white stomach, makes a very handsome rug. Mr. Wilson notes that the males are seldom seen far from some rocky ground, to which they retire when

alarmed, and that all are accustomed to place sentries on some commanding positions whilst the rest of the flock is feeding. For Hodgson's description see J. A. S., Ben., IV., 492 : Lyddeker, *Ibid*, XLIX., ii., 131 : Kinloch gives a photograph of the head of a male, 25.

The wild buffalo and the rhinoceros are no longer found west of the Sárda, and must be definitively excluded from the list of Kumaon mammals. It is now only necessary very briefly to indicate the principal animals of that portion of Tibet adjoining Kumaon and Garhwál. There we have the *chús* or Tibetan antelope (*Kemas Hodgsoni*) on the slopes near lake Mánasarowar and along the head-waters of the Satlaj, and the pretty Tibetan gazelle (*Piocápra picticaudata*), the *gawa* of the Húniyas. But the most conspicuous and most common amongst the larger mammalia is the *Kyang* or wild-ass (*A. Kyang*). It roams all over the country in troops of ten to twenty. Solitary males are, however, met with and frequently bear the marks of the conflict that has led to their expulsion from the drove. Their summer coat is close and shining, above clear antelopine-red ; below with the entire limbs and muzzle flavescens-white : mane, tuft of tail and a dorsal line connecting them brown-black. The winter coat is rough like that of a camel and the rufous hue is more pronounced. Almost all writers notice the occurrence in numbers of this animal beyond the passes from British territory into Tibet. The *chánko* or *chángu*, Tibetan wolf (*Canis laniger*) is not uncommon, though from its habits it is seldom seen. It is very fierce and bold, and does considerable damage to the flocks of the Húniyas. Hodgson states that *F. Diardi*, Desm. (Jerdon, 102), the clouded leopard, occurs in Tibet, but it is doubtful. The more common lynx is the *ee* of the Húniyas, the *Felis isabellina* of Blyth, but there is a second smaller cat-like animal, *F. Manul*, Pallas (*F. nigripectus*, Hodgk.). There are several species of badger, a pole-cat, martens, weasels, numerous marmots and leporine animals, a description of which will be found in the works noticed in the 'References' attached to this chapter. The *ban-chaur* or wild yak (*Dos grunniens*, Lin.) is found in the valleys around the head-waters of the Satlaj and in similar localities the *nyán* or *nán* (*Ovis Ammon*, Lin.) is met with, though in no great numbers. Dunlop procured a specimen for the

Tibetan fauna.

yak on the Tibetan side of the snows, in the tract between the Nfti and the Unta-dhúra pass and a specimen of the *nyán* near the same locality. Both these animals are of great size. The tame yak exceeds in bulk the ordinary bullock of the plains, and in the expressive language of the hill-men, "the liver of a wild yak is a load for a tame one." Dunlop shot one measuring nine feet around the chest, while his horns were sixteen inches in circumference at the base and eleven inches half way up. A specimen of the *nyán* is said to have stood thirteen hands high, but the usual height is 36"-44." One measuring 42" high was 74" in length : tail with the hair 8" ; ear 6" : horns along the curve 40" and circumference at the base 17." A head with horns attached will weigh 40lb., a fair load for a porter in the hills. The *márhkor* (*Capra megaceros*, Hut.), the ibex (*Capra sibirica*, Meyer) and the *urid* (*Ovis cycloce-ros*, Hut.) are not found in the Kumaon Himálaya nor in the portion of Tibet between the sources of the Satlaj and those of the Karnáli.

The domestic cattle indigenous to the province are small in size and usually red or black in colour, resembling much the Kerry cow in appearance. Early every morning the village herds are driven to the ridges of the neighbouring hills for pasture, and are again collected before sunset and housed either in the lower story of the dwelling-house or in a temporary shed erected close to the village site. As a rule, the milch cattle are not fed on grain or chaff, but are only pastured, and after the harvest are allowed to eat down the stalks remaining in the fields. During the early winter and summer, when the grass is dry and worthless, the cattle from the lower hills of Kumaon are driven to the Bhábar for pasturage where they remain from October until May. Whilst there, the inhabitants of neighbouring villages in the hills usually canton together and construct for themselves temporary sheds of boughs of trees with roofs of thatch or leaves. The cattle of the upper hills and of the greater part of Garhwál and westward to the Tons find pasturage all the year round in the upper hills. Neither bullocks nor buffaloes are used for commercial transport, but they share with ponies and women the duty of carrying their owners' baggage in the annual migration to and from the Bhábar. No

census of domestic cattle has been taken of late years, but in 1822 a rough estimate gave 241,314 head distributed as follows :—

District.			Cows.	Bullocks.	Buffaloes.	Total.
Kumaon	...	...	58,280	36,938	42,959	138,177
Garhwál	...	...	66,355	28,546	8,236	103,137

Since then it would be safe to say that the cattle have increased by one-third, giving in round numbers an estimate of 321,000 head for Kumaon and Garhwál, or half a million for the tract between the Tons and Sánda, excluding the Taráí. The cattle in the Taráí temporarily increase in numbers every year by the droves brought up from the plains for pasturage. The average of the returns for the three years 1876-77 to 1878-79 shows that 35,000 head of cows and bullocks and 4,000 head of buffaloes paid the grazing tax each year, to which must be added those which escaped the tax owing to local privileges. The number of the latter may be gathered from the plough statements, allowing two bullocks for each plough and also an average of two cows for each plough, and taking the ploughs at 18,000 we have 72,000 head of cattle belonging to the permanent inhabitants of the Taráí, and adding these to the cattle sent for grazing a total of 111,000 for the whole Taráí or say 600,000 head of cattle for the entire tract with which we are concerned. This is merely an estimate, but it is the nearest that under the circumstances we can arrive at.

The greater part of the supply of bullocks for agricultural purposes is met from the Bhábar, where they are bred in large numbers or are imported from the Oudh districts notably from Nanpára. A pair of light bullocks will cost from Rs. 20 to Rs. 50 and a large pair up to Rs. 80. Several attempts have been made to improve the local breed of agricultural cattle, but all have failed. Bulls imported from Hissár were found to be unable to endure the steamy heat and the troublesome insect torments of the Bhábar and Taráí. The cultivators objected to them that they were too heavy for common purposes, and that it required more care than could be bestowed to bring up the young calves. The foot-and-mouth disease is common and in some years runs through whole tracts of country, destroying great numbers of cattle: during the year 1881 it has

been particularly severe in Kumaun. It is said to be a variety of rinderpest for which no effectual remedy has yet been discovered, though, according to some, the leaves of the common *Potentilla* dried and powdered and administered internally are said to possess prophylactic properties in these cases. Buffaloes are kept in considerable numbers for milking purposes and manure, and those bred in the Bhábar often attain to an enormous size. There are several local breeds varying in value from 20 to 60 rupees each.

In the Bhotiya maháls or villages north of the culminating range of the Himálaya the *chaura-gái* or yak
Yak. (*Bos grunniens*, Lin.) imported from Tibet and the hybrids between that animal and the kine of the country are used for carrying purposes. When the sire is a yak and the dam a hill cow, the hybrid¹ is called *jubú*; when the parentage is reversed, the produce is called *garjo*. The *jubú* is found more valuable than the other hybrid or than either of the pure stocks. It will carry from two to three maunds and is also used for riding in the snows. It is very sure-footed, hardy and docile and capable of enduring great fatigue. Its price is from 30 to 60 rupees. Both varieties breed freely together and with the pure stock; in the former case the race degenerates, but in the latter the offspring gradually resumes the characteristics of the pure breed. The yak is seldom brought down lower than the summer residence of the Bhotiyas, though the *jubú* goes as far as Rámnagar without appreciable injury. Those used in the local traffic are bred for the most part in Bisahr.

The sheep and goats used by the Bhotiyas for carrying purposes are not bred by them, but are purchased in
Sheep and goats. the villages of the Dánpur and Badháugarh parganas or are imported from the Chamba district of the Panjáb Himálaya. The latter is the usual course, and in order to keep the trade in their own hands, the importers bring only ewes. Traill's description still holds good:—"The pasture on the upper ranges of the Himálaya are found to yield a grass in a peculiar degree nutritive to sheep. On the melting of the winter snows, towards the end of March, these mountains which, though lofty, are by no means precipitous, become covered with verdure, and are then

¹ In Tibetan *dashobu*.

resorted to by the flocks of the neighbourhood. A few days are said to suffice to restore the animals to condition, though ever so much reduced by the fasts and rigors of the preceding winter. The grass of these pastures is distinguished by the shepherds under a particular name, and has the universal reputation of being inexhaustible, the growth during the night being said to compensate fully for the consumption of the day. The flocks continue here till the commencement of the rains, when they are driven to less rich pastures on the more southern ridges ; with the setting in of winter, they return to the villages. During this season, the sheep are compelled to browse with the goats ; branches, chiefly of the oak, being cut down for them, and hay, though stored in small quantities for cattle, is never given to sheep. In some parts of Garhwál the leaves of trees, particularly of the mulberry, are dried and stocked in autumn, to serve as fodder for the winter. The *kinu* or mulberry is there, consequently, much valued, and the property in its foliage forms an object of sale and purchase distinct from the land. While on the mountains, the flocks are secured during the night in folds ; these are situated along the ridges, and being intended for annual resort, are substantially built with layers of dry stone : the wall is raised to nine or ten feet, so as to exclude beasts of prey : only a single door of entrance is left, and that of the smallest dimensions, with the same view, as the leopards, when the door is high, break it down without difficulty by leaping against it. In the interior, sloping *chhappars* are erected along one or more sides, according to the number of animals to be sheltered. Every village has commonly its separate fold at each of the periodical pastures ; the ridges in question, consequently, exhibit the appearance of a chain of fortified posts, the resemblance being increased by the individual sites of these erections, which, with a view to facility of draining, are placed on the summits of rising grounds."

The hill sheep are small with wiry brownish-grey wool, short tails and large horns. They are not good for the table and are kept for the sake of the wool, out of which coarse blankets are made. Attempts have been made to improve the breed by the importation of Tibetan, English and Australian rams, but hitherto the results are imperceptible. The common diseases of sheep, such as rot, mange, small-pox, &c. are all here prevalent and, in some years, extremely

destructive; the goats are further liable, in wet weather, to a disease called *khari*, which frequently terminates in the loss of the hoofs. The casualties are further augmented by exposure and fatigue, by accidents, and by wild beasts; and as the females—even those with young at their feet—are not exempted from labor, it can be a matter of no surprise that the Bhotiya annually finds himself called on to make a fresh outlay for keeping up his stock. The common description of sheep carries from ten to sixteen pounds and is worth about three rupees. The Tibetan sheep are also employed by the Bhotiyas in their carrying trade and are taller, stronger and more active than the Kumaon breed. They carry from thirty to forty pounds, but being unable to bear the heat of the Cis-Himálayan tract are usually kept by their owners at some adjoining village in Tibet and are brought into use when the passes open. The regular day's journey is about five miles in consequence of the great time required for pasture which is their only subsistence.

Goats both those bred in Kumaon and those imported from Tibet are also used in the carrying trade. They bear burdens of from twelve to twenty-four pounds and are worth four to five rupees. They are usually chosen from their superior boldness and activity as leaders of the flock and are furnished with bells. It is chiefly by means of these goats and sheep that the salt and borax of Tibet are brought to the lowland markets and there exchanged for the commodities of the plains. The salt and borax are carried in a sort of pack made of worsted with a pair of pockets called *karbaj* (*phancha* in Garhwál) slung across the animal's back. These pockets are partly covered with leather to protect the contents from moisture when travelling or when piled on the ground in camp. The pack is girthed underneath the body and a band around the chest and another crupper-wise under the tail render it perfectly safe when moving up or down hill. It is marvellous to observe the business-like way in which these little beasts of burden carry their loads. Coming upon them on the very narrowest, steepest and most slippery ascent or on the brink of a precipice, they seem intent only on pursuing their way, not turning aside for anything or any one, their obstinacy often causing the traveller uneasiness and always teaching him patience. And not the less curious is to observe

flocks of them numbering many hundreds meeting in a narrow path, each going the contrary way and yet none make a mistake, but persist in following their own leader and patiently overcome all obstacles in doing so. Goats are sometimes imported from Tibet for food or sacrifice, but their flesh is very strong and ill-flavoured. The indigenous breed is raised in the same places and by the same people who keep the indigenous sheep. Goats are, as a rule, low sized and stoutly made, although those bred in the more northern parts often attain fair proportions. They are subject to the same diseases as sheep and are frequently poisoned by eating the rank herbage that springs up in the rains. The leaves of the *ayár* (*Andromeda ovalifolia*) so common about Naini Tál are also said to be fatal to goats. The hill-goat is useless for milk-giving purposes and is bred chiefly for the carrying trade or for food and sacrifice. Large flocks of sheep and goats arrive in the Taráí from the plains about the end of October for pasture. They consist for the most part of ewes, and as soon as the lambs are sufficiently strong, they are again taken to the plains. The sheep brought for the supply of the Mussooree and Naini Tál markets usually come from the Kangra and Kulu districts of the Panjáb Himálaya, though the districts of the middle Duáb also supply a large number, smaller in size, but, when fed on grain for some time, yielding excellent mutton.

From the earliest years of British rule much attention has been paid to collecting information regarding the *pushm* or shawl-wool trade with Tibet, but with little practical result. The papers by Raper and Moorcroft in the earlier records and that drawn up by Captain E. Smyth in 1853 are now obsolete, but still present some features of interest. *Pushm* is procurable at all the Tibetan marts at from ten to twelve annas per pound, to which has to be added the cost of carriage. There are two sorts, the black and white; the latter being more valuable and more common than the former. The *pushm* of the yak is also produced in large quantities, but is much coarser than goat *pushm*. It is not much sought after for export and is consumed on the spot for making ropes, cloth for tents and coarse blankets for wear. Rúduk and Gartok are the principal marts for the sale of shawl-wool, which is procurable also at Taklakhár, Chapráng, Gángri and from Haurba, Chhyúlithol Banbuwáthol,

Dábáling and Magana. The export trade is principally confined to Ladák and Káshmir. The goat-shearing season commences about the beginning of June and the hair is not separated from the *pushm* or under-wool by the Huniyas, but is sold as sheared and is subsequently sorted by the purchasers. For some years all the wool produced to the north of Gartok and also that from the districts to the east and south has, by order of the Chinese authorities, been concentrated there and sold only to Ladáki and Káshmiri merchants or their agents. Still the Kumaoni traders have always been able to smuggle some shawl-wool into Kumaon, but the demand is so restricted and the market for this class of wool having been already well established at Rámpur in Bisahr, the quantity has never been considerable. The Kumaoni traders are also put to some disadvantage by the lateness of the season at which the passes are open. The road from Kunáor to Tibet along the valley of the Satlaj by which much of the *pushm* is imported opens very early and the traders have time to push up to Taklakhár to the east of the Byáns pass before our Bhotiyas have begun to cross their passes. Of late years a trade in wool, both raw and manufactured, has sprung up, but is subject to many vicissitudes. The imports through the passes into British territory have been as follows :—

Year.	Raw wool.		Blankets.	Value.
	...	Maunds.	Maunds.	Rs.
1877-78	...	6,225	1,072	1,09,845
1878-79	...	3,049	255	54,142
1879-80	...	2,373	311	51,275

This trade is almost entirely in sheep's wool and can hardly be considered well-established. The Huniyas bring their earliest ventures to Milam and have their sheep sheared there, selling the produce to our Bhotiyas. A certain small amount is also brought by the Bhotiyas from Gartok, but only, so it appears, sufficient to give them and their women employment in the manufacture of the thick woollen blankets known as *thalmas* and *chaptus* and the coarse gowns known as *chaugas* or *bakus*.¹ These are distinguished from the local woollen manufactures by their having the wool on one side combed up so as to resemble a fleece. A Bhotiya is hardly ever to be seen without a string of this wool spinning by the simple means of a leaden weight and the torsion given by his fingers. The women

¹ Fuller in Rep., 1878-79.

weave the thread into blankets, which sell at Bâgeswar fair at from five to eight rupees each. The Tibetan wool can be delivered at Bâgeswar at about twenty rupees for 82lb. The coarser wool of the Bhotiya sheep is known as *bagiali* and is entirely consumed locally for local wants. There does not seem to be much prospect of any important trade arising in wool with Tibet. The *pushm* is limited in supply and fetches uncleaned from Rs. 60 to Rs. 70 per 82lb. at Bâgeswar, and the trade is still practically a monopoly in the hands of the agents of the Kâshmir and Ludhiâna manufacturers. The supply of sheep's wool from all this portion of Tibet can hardly exceed 15,000 maunds or 550 tons, quite insufficient to establish a special industry and the supply from the carrying sheep is consumed locally. Those who are interested in the question of the wool-trade with Tibet will find some accurate information on the subject in the annual reports of the Department of Commerce.

The Tibetan or hill pony is imported from Tibet by the Bhotiyas and is generally known under the name *gunt*. Those brought from the Chhainurti district are held in high repute and fetch very high prices. The price of the ordinary *gunt* ranges from Rs. 150 to Rs. 300. They are clumsy, rough and small, but sagacious, strong, active, very sure-footed and docile. The pony in more common use amongst the hill people is the *banjâra* variety, bred in large numbers along the foot of the hills. It is a very hardy, useful small sized animal and does most of the carrying work between the plains and the hill sanitarium. It is worth from twenty to forty rupees. Grass, gram, barley-meal, *urd* and *bhat* are used as fodder for ponies, and the last is the only grain procurable for them in the upper pattiis.

There are two varieties of the domestic dog—the Tibetan mastiff, which is large, strong with a shaggy coat, very fierce and well adapted to defend the flocks of its owner from beasts of prey and robbers; and the hill variety of the common pariah dog of the plains. The former will not stand well the heat of the plains and owing to its fierce disposition is an undesirable pet; the latter is a finer and more handsome animal than his brother of the plains and becomes an attached and faithful companion. Both are much subject to hydrophobia, and few years pass without its occurrence being brought to notice unpleasantly. I have heard of Tibetan terriers, but have never seen them.

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Four new species of otter. *Ibid*, VIII., 319 (Jerdon, 66).

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A new mole, *Talpa macrura*. *Ibid*, XXVII., 176 (Jerdon, 51).

- On the various species of *Oaninae*. Cal. J. N. H. II., 205, 412.
 On the civet of India. *Ibid*, II, 47 (*V. Zibetha*).
 A new species of *Paradoxurus*. As. Res. XIX., i., 73 (*P. Bowdar*).
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Lagomys nepalensis. *Ibid*, X., 854 (*L. Roylei*).
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 The common hare of the plains and Sub Himálaya. *Ibid*, IX., 1183 (*L. ruficaudatus*).
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 Anatomy of *Ailurus*, *Procula* and *Styloceros*. *Ibid*, XVII., ii., 475, 573.
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Cervus Elaphus of the *sál* forests. X, 721 (Jerdon, 251).
Cervus Duvaucellii. V, 240 (Jerdon, 254).
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 On the *Shou* or Tibetan stag. XIX., 466, 578: XX., 398 (Jerdon, 251).
 The Jarai. I., 66, 115 (Jerdon, 256).
 On the *Bidos*, *Gauri gau* of the Indian forests. VI., 745: X, 449.
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 On a new species of Vespertillo. *Ibid.*, 205.
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BIRDS.¹

THE hill districts of the North-Western Provinces are about equally distant from the Brahmapura on the one hand and the Indus on the other, and occupy the central portion of the Himálayan range proper. The birds of the Eastern

Birds. Himálaya approximate to the Indo-Malayan forms in the lower hills; and in Nepal, especially to the north, the fauna is characterised by many peculiar and striking forms, but few of which are as yet known to cross the Káli into Kumaun. In the Western Himálaya, the fauna approaches to that of the western palæarctic region, and stragglers from among some of the more typical forms find their way as far as Garhwál. On the north the mountain-haunting species of the Eastern palæarctic region are found, while to the south is the Indian region proper, with its fairly distinctive fauna. The commoner birds of this tract are those which are found throughout the Himálayan range, but situated as it is, many stragglers from the surrounding regions are found among the rarer birds. On the west such species as *Coracias garrula*, *Calacanthis burtoni*, and others, extend into Garhwál; on the north stragglers from Tibet, such as *Corvus tibetanus*, *Syrrhaptes tibetanus*, *Perdix hodgsoniæ*, &c., are occasionally met with; on the east, Nepalesé forms, such as *Palæornis javanicus*, *Oriolus traillii*, *Cissa sinensis*, *Henicurus schistaceus*, *Yuhina occipitalis*, &c., are found in Kumaun. Stragglers from the lower Bengal and Indo-Malayan forms, such as *Eurystomus orientalis*, *Psalisomus dalhousiæ*, &c., are found in the lower hills and sub-Himálayan tracts; while many of the species inhabiting the plains of Northern India extend into the Dúns and outer ranges.

¹ This list of the birds found in the Himálaya between the Káli and the Tons has been kindly prepared by Captain G. Marshall, R.E.

But little has as yet been recorded of natural history researches in this tract, and further observations would probably greatly extend the list of birds now given. Probably some fifty more of the eastern forms among the vultures, eagles, owls, kingfishers, hornbills, piculets, barbets, cuckoos, sunbirds, treecreepers, woodshrikes, minivets, flycatchers, wrens, shortwings, ant thrushes, timaline birds, bulbuls, chats, warblers, pipits, hilltits, &c., will be found to extend into Kumaun. In the Dáns *Megalurus palustris*, *Chortornis striatus*, several *Locustellas*, *Burnesia gracilis*, *Acridotheris gingimianus*, *Porzana maruetta*; *Rallus striatus* and *Rallus indicus* may almost certainly be found, though their occurrence has not as yet been recorded. Similarly, on the northern limits, *Grandala œlicolor*; *Accentor altaicus*, *A. strophiatius*, *A. rubeculoides*; *Pica bottanensis*, *Pyrhocorax alpinus*; and *Tetraogallus tibetanus*, though not yet recorded, will probably be found; several species of *Dumeticola* and *Proparus vixipectus* have been found both east and west of this tract, but not as yet within its limits. A large number of the birds included in this list among the harriers, reedwarblers, rubythroats, warblers, willow-wrens, wagtails, pipits, pigeons, quail, snipe, sandpipers, and others, are regular migrants, to be found in spring and autumn, and probably other birds of these classes will be found from time to time; and many of the permanent residents, which pass the summer in the higher ranges, are found in winter in the glens and warm valleys.

AVES.

(NOTE.—The numbers prefixed are those of Jerdon's "Birds of India"; for birds not included in Jerdon's book the number of the most nearly allied species is given, with the addition of "bis," "ter," &c., as the case may be. The references in brackets following the English name are to detailed descriptions of the species).

1. Vultur monachus, the great brown vulture (Jerdon I., 6). 5,000 to 10,000 feet; rare.
2. Otogyps calvus, the black king vulture (Jerdon I., 7). Common up to about 3,000 feet.
3. (ter) Gyps himalayensis, the griffon vulture (S. F. VII., 323). From 4,000 to 10,000 feet; common.
4. Gyps indicus, the long-billed vulture (S. F. VII., 165). In the Dáns and sub-Himálayan tracts.
5. Gyps bengalensis, the white-backed vulture (Jerdon I., 10) Common up to about 5,000 feet.

6. *Neophron ginginianus*, the white scavenger vulture (Jerdon I. 12). Common up to 5,000 feet.
7. *Gypaetus barbatus*, the Lammergeyer, or bearded vulture. (Jerdon I., 13). 5,000 to 10,000 feet.
8. *Falco peregrinus*, the peregrine falcon (Jerdon I., 21). In the Dún, rare; a cold weather migrant.
9. *Falco peregrinator*, the abáhn falcon (Jerdon I., 23). From 3,000 to 10,000 feet; a permanent resident.
11. *Falco jugger*, the lagger falcon (Jerdon I., 30). The Dún, Kumaun, at low elevations; rare.
12. *Falco subbuteo*, the hobby (Jerdon I., 33). A cold-weather visitant; rare at all elevations.
14. *Falco severus*, the Indian hobby (Jerdon I., 34) Kumaun and East Garhwál; at low elevations; rare.
16. *Falco chiquera*; the red-headed merlin (Jerdon I., 36). The Dún and warm valleys; not uncommon.
17. *Cerchneis tinnunculus*, the kestrel (Jerdon I., 38). Common at all elevations in winter; breeds at 5,000 feet.
19. (*bis*) *Cerchneis amurensis*, the eastern red-footed kestrel (S. F. II., 527). Rare.
20. *Microhierax cœrulescens*, the white-naped pigmy falcon (Jerdon I., 42). Kumaun; 4,000 feet. Rare.
21. *Astur palumbarius*, the goshawk (Jerdon I., 45). 9,000 to 15,000 feet permanent resident.
23. *Astur badius*, the shikra (Jerdon I., 46). Not uncommon at low elevations.
24. *Accipiter nisus*, the sparrowhawk (Jerdon I., 51). Common at all elevations; breeds at 5,000 to 10,000.
25. *Accipiter virgatus*, the Besra sparrowhawk (Jerdon I., 52). Rare.
26. *Aquila chrysaetos*, the golden eagle (Jerdon I., 55). Rare; at great elevations near the snows.
27. *Aquila mogilnik*, the imperial eagle (S. F. I., 290). The Dún in the cold weather; rare.
28. *Aquila clanga*, the spotted eagle (Jerdon I., 59). The Dún; permanent resident; not uncommon.
29. *Aquila vindhyana*, the Indian tawny eagle (Jerdon I., 60). The Dún; permanent resident; not uncommon.
30. *Aquila hastata*, the long-legged eagle (Jerdon I., 62). The Dún; permanent resident; not uncommon.
31. *Hieractes pennatus*, the booted eagle (Jerdon I., 63). In the Dún and warm valleys; very rare.
32. *Neopus malaiensis*, the black eagle (Jerdon I., 65). 5,000 to 10,000 feet; rare.
33. *Nisaetus fasciatus*, Bonelli's eagle (Jerdon I., 67). At all elevations, but rare.
34. *Immaetus caligatus*, the changeable hawk-eagle (Jerdon I., 70). The Dún and warm valleys.

36. *Limnaetus nipalensis*, the Nepal hawk-eagle (Jerdon I., 73). 5,000 to 8,000 feet; rare.
38. *Circus gallioides*, the short-toed eagle (Jerdon I., 76). The Dún and warm valleys; rare.
39. *Spilornis cheela*, the crested-serpent eagle (Jerdon I., 77). The Dún and lower hills; not uncommon.
40. *Falco halliastus*, the osprey (Jerdon I., 80). The Dún and valleys of big rivers.
41. (*bis*) *Poleoetus plumbeus*, the Himalayan fishing eagle (S. F. III. 385). The Dún and valleys of big rivers.
42. *Haliaeetus leucorhynchus*, the ring-tailed fishing eagle (Jerdon I., 82). The Dúns only.
43. *Buteo ferox*, the long-legged buzzard (Jerdon I., 83). The Dún in winter; not very common.
44. *Buteo leucocephalus*, the upland buzzard (Jerdon I., 90). At great elevations; extremely rare.
47. *Buteo plumipes*, the harrier buzzard (Jerdon I., 91). Not uncommon from 5,000 to 8,000 feet.
48. *Buteo teesa*, the white-eyed buzzard (Jerdon I., 92). The Dúns only; rather rare.
50. *Circus cyaneus*, the hen harrier (Jerdon I., 95). The lower hills in winter only; rare.
51. *Circus macrurus*, the pale harrier (Jerdon I., 96). The Dúns; common in winter only.
52. *Circus cineraceus*, Montague's harrier (Jerdon I., 97). The Dúns and lower hills, in winter only.
53. *Circus melanoleucus*, the pied harrier (Jerdon I., 98). The Dúns and lower hills in winter only; very rare.
54. *Circus aeruginosus*, the marsh harrier (Jerdon I., 99). The Dúns only; common in winter.
55. *Haliaeetus indus*, the brahmīnī kite (Jerdon I., 101). The Dúns; only permanent; not common.
56. *Milvus affinis*, the common pariah kite (Jerdon I., 104). Common up to 7,000 feet.
58. (*bis*) *Milvus govinda*, the larger Indian kite (Hume's rough notes, I. p. 326). Not uncommon at all elevations.
57. *Fernis ptilorhynchus*, the crested honey buzzard (Jerdon I., 106). The Dúns and warm valleys.
59. *Elanus coruleus*, the black-winged kite (Jerdon I., 112). The Dúns and warm valleys.
61. *Strix candida*, the grass owl (Jerdon I., 113). The Dúns and outer hills; not uncommon.
63. *Syrnium newareense*, the Nepal brown wood owl (Jerdon I., 122). About 5,000 to 8,000 feet; rare.
65. *Syrnium ocellatum*, the mottled wood owl (Jerdon I., 123). The Dúns and warm valleys.

66. *Syrnium nivicolium*, the Himalayan wood owl (Jerdon I., 124). 5,000 feet and upwards; rare
67. *Asio otus*, the long-eared owl (Jerdon I., 125). At all elevations in the winter; rare.
68. *Asio accipitrinus*, the short-eared owl (Jerdon I., 126). At all elevations in the winter; rare.
69. *Bubo bengalensis*, the rock horned owl (Jerdon I. 128). The Dáns and warm valleys only.
70. *Bubo coromandus*, the dusky horned owl (Jerdon I., 130). The Dáns and warm valleys.
72. *Ketupa ceylonensis*, the brown fish owl (Jerdon I., 133). The Dáns and warm valleys.
74. *Scops pennatus*, the Indian scops owl (Jerdon I., 136). At moderate elevations; not common.
74. (*bis*) *Scops sunia*, the Indian red scops owl (Jerdon I., 137). At moderate elevations; not common.
74. (*ter*) *Scops spilocephalus*, the bare-foot scops owl (S. F. VII., 352). 5,000 to 8,000 feet; common.
75. *Scops lettia*, the Nepal scops owl (Jerdon I., 139). Kumaon only; 5,000 feet; rare.
75. (*bis*) *Scops plumipes*, the plume-foot scops owl (S. F. VII, 357). Garhwát only; rare.
75. (*ter*) *Scops bakkamona*, Tennant's scops owl (Jerdon I., 139, S. F. VII., 359). The Dáns and warm valleys.
76. *Carine brama*, the spotted owlet (Jerdon I., 141). The Dáns only; not common.
77. *Glaucidium radiatum*, the jungle owlet (Jerdon I., 143). The Dáns; common.
79. *Glaucidium cuculoides*, the large barred owlet (Jerdon I., 145). The lower hills up to 6,000 feet.
80. *Glaucidium brodiei*, the collared pigmy owlet (Jerdon I., 146). From 4,000 to 10,000 feet; tolerably common.
81. *Ninox lugubris*, the dusky hawk owl (Jerdon I., 147, in p. S.F. IV., 285). The Dáns and warm valleys; very rare.
82. *Hirundo rustica*, the common swallow (Jerdon I., 157). Not uncommon at 5,000 to 10,000 feet.
84. *Hirundo flifera*, the wire-tailed swallow (Jerdon I., 159). The Dáns only; common.
85. (*bis*). *Hirundo nipalensis*, the Himalayan mosque swallow (S. F. V. 262). Common up to 8,000 feet.
86. *Hirundo fuvicola*, the Indian cliff swallow (Jerdon I., 161). The Dáns only; very local.
89. *Cotyle sinensis*, the Chinese sand martin (Jerdon I., 164). The Dáns only; common.
91. *Ptygenoprogne rupestris*, the creag martin (Jerdon I., 166). From 7,000 to 10,000 feet; rare.

93. *Chelidon kashmirensis*, the Kashmir martin (Jerdon I., 167). From 7,000 to 10,000 feet; not common.
94. *Cypselus melba*, the alpine swift (Jerdon I., 175). Common at 3,000 to 8,000 feet.
95. *Cypselus apus*, the European swift (Jerdon I., 177). At 6,000 to 10,000 feet; very rare.
100. *Cypselus affinis*, the common Indian swift (Jerdon I., 177). Very common up to 8,000 feet.
103. *Collocalia unicolor*, the Indian swiftlet (Jerdon I., 182). At 5,000 to 9,000 feet; not uncommon.
104. *Dendrochelidon coronatus*, the Indian crested swift (Jerdon I., 185). The Dáns only; very rare.
107. *Caprimulgus indicus*. The jungle nightjar (Jerdon I., 193). Up to about 4,000 feet; not common.
109. *Caprimulgus albonotatus*, the large Bengal nightjar (Jerdon I., 194). Up to about 4,000 feet; common.
112. *Caprimulgus asiaticus*, the common Indian nightjar (Jerdon I., 197). Up to 6,000 feet; not common.
114. *Caprimulgus monticola*, Franklin's nightjar (Jerdon I., 198). The Dáns and up to 5,000 feet; common.
117. *Merops viridis*, the common bee-eater (Jerdon I., 205). The Dáns only; very common.
118. *Merops philippensis*, the blue-tailed bee-eater (Jerdon I., 207). The Dáns and warm valleys; local.
119. *Merops swainsoni*, the chesnut-headed bee-eater (Jerdon I., 208; S. F. II, 163). The Dáns; local.
122. *Nyctiorhis athertoni*, the blue-ruffed bee-eater (Jerdon I., 211). The Dáns; local.
123. *Coracias indica*, the common roller (Jerdon I., 214). The Dáns; common.
125. *Coracias garrula*, the European roller (Jerdon I., 218). The Bhagirati valley; a very rare straggler.
126. *Eurystomus orientalis*, the broad-billed roller (Jerdon I., 219). Kumaun Bhábar; very rare.
127. *Pelargopsis gurla*, the Indian stork-billed kingfisher (Jerdon I., 223). The Dáns; rare.
129. *Halcyon smyrnensis*, the white-breasted kingfisher (Jerdon I., 224). The Dáns; common.
134. *Alcedo bengalensis*, the little Indian kingfisher (Jerdon I., 230). Common along the big rivers.
136. *Ceryle rudis*, the pied kingfisher (Jerdon I., 232). The Dáns only; common.
137. *Ceryle guttata*, the large-crested pied kingfisher (Jerdon I., 234). The Dáns and warm valleys.
138. *Parisomus dalhousii*, the yellow-throated broad-bill (Jerdon I., 236). From 3,000 to 8,000 feet.
140. *Dichoceros cavatus*, the great hornbill (Jerdon I., 243). The Dáns and sub-Himálayan forests.

143. *Hydrocissa affinis*, the Dehra Dún hornbill (Jerdon I., 247). The Dúns only ; not uncommon.
144. *Ocyroceros birostris*, the common grey hornbill (Jerdon I., 246). The Dúns only.
147. *Falsonornis nipalensis*, the northern rose-barréd paroquet (S. F. I., 335, and II., 10). The Dúns only ; common.
148. *Falsonornis torquatus*, the rose-winged paroquet (Jerdon I., 257). The Dúns and warm valleys ; common.
149. *Falsonornis purpureus*, the rose-headed paroquet (S. F. II., 15). The Dúns and warm valleys ; common.
150. *Falsonornis schisticeps*, the slaty-headed paroquet (Jerdon I., 261). From 4,000 to 8,000 feet ; common.
152. *Falsonornis javanicus*, the red-breasted paroquet (Jerdon I., 262). In the warm valleys ; not common.
154. *Picus himalayensis*, the Himalayan pied woodpecker (Jerdon I., 269). From 5,000 to 10,000 feet.
157. *Picus macei*, the Indian spotted woodpecker. (Jerdon I., 273). From the Dúns to 6,000 feet.
159. *Picus brunneifrons*, the brown-fronted woodpecker (Jerdon I., 273). The Dúns to 6,000 feet.
160. *Picus mahratensis*, the yellow-fronted woodpecker (Jerdon I., 274). The Dúns only.
161. *Hypopieus hyperythrus*, the rufous-bellied pied woodpecker (Jerdon I., 276). From 4,000 to 8,000 feet.
163. *Yungipicus pygmaeus*, the Himalayan pigmy woodpecker (Jerdon I., 277). From 2,000 to 5,000 feet.
164. *Yungipicus nanus*, the southern pigmy woodpecker (Jerdon I., 278). The Dúns only.
166. *Chrysocolaptes saltaneus*, the golden-backed woodpecker (Jerdon I., 281). From 3,000 to 9,000 feet ; rare.
168. *Muelleripicus pulverulentus*, the large slaty woodpecker (Jerdon I., 284). The Dúns only ; very rare.
170. *Gecinus squamatus*, the scaly-bellied green woodpecker (Jerdon I., 286). From 4,000 to 8,000 feet ; common.
171. *Gecinus striolatus*, the lesser Indian green woodpecker (Jerdon I., 287). The Dúns only ; rare.
172. *Gecinus occipitalis*, the black-naped green woodpecker (Jerdon I., 287). From 4,000 to 8,000 feet ; common.
173. *Chrysophlegma flavinucha*, the large yellow-naped woodpecker (Jerdon I., 289). From 2,000 to 6,000 feet.
174. *Chrysophlegma chlorolophus*, the lesser yellow-naped woodpecker (Jerdon I., 289). The Dúns and warm valleys ; rare.
178. *Micropternus phaeiceps*, the Bengal rufous woodpecker (Jerdon I., 294). The Dúns and warm valleys ; rare.
180. *Brochopternus aurantius*, the common goldback woodpecker (Jerdon I., 295). The Dúns only ; very common.

188. *Tiga shorii*, the large three-toed woodpecker (Jerdon I., 298). The Dúns and warm valleys; rare.
186. *Vivia innominata*, the speckled piculet (Jerdon I., 300). From 2,000 to 5,000 feet; not uncommon.
185. *Yunx torquilla*, the wryneck (Jerdon I., 303). The Dúns only; not uncommon.
191. *Megalasma marshallorum*, the Marshall's barbet (Jerdon I., 308). From 4,000 to 8,000 feet; common.
192. *Megalasma hodgsoni*, Hodgson's green barbet (Jerdon I., 309). The warm valleys; common.
193. *Megalasma caniceps*, Franklin's green barbet (Jerdon I., 310). The Sewalik and Bhábar only.
195. *Megalasma asiatica*, the blue-throated barbet (Jerdon I., 313). The warm valleys only.
197. *Xantholasma hæmacephala*, the crimson-breasted barbet (Jerdon I., 315). The Dúns only; common.
199. *Cuculus canorus*, the common cuckoo (Jerdon I., 322). A summer migrant.
200. *Cuculus striatus*, the Himalayan cuckoo (Jerdon I., 323). Common from 3,000 to 7,000 feet.
201. *Cuculus poliocephalus*, the hoary-headed cuckoo (Jerdon I., 324). Common up to 6,000 feet.
203. *Cuculus micropterus*, the Indian cuckoo (Jerdon I., 326). Common up to about 6,000 feet.
205. *Hierococcyx varius*, the common hawk-cuckoo, (Jerdon I., 329). The Dúns only; common.
207. *Hierococcyx sparveriioides*, the large hawk-cuckoo (Jerdon I., 331). From 5,000 to 8,000 feet; common.
208. *Cacomantis passerinus*, the Indian plaintive cuckoo (Jerdon I., 333). The Dúns and warm valleys; rare.
210. *Surniculus lugubris*, the Drongo cuckoo (Jerdon I., 333). The Dúns and warm valleys; rare.
211. *Chrysococcyx maculatus*, the emerald cuckoo, (Jerdon I., 338, S. F. VI., 161). From 3,000 to 5,000 feet; rare.
212. *Coccyzus jacobinus*, the pied-crested cuckoo (Jerdon I., 339). Up to 4,000 feet; common in the rains.
214. *Eudynamis honorata*, the koel (Jerdon I., 342). The Dúns only; common in the hot weather.
217. *Centroccocyx rufipennis*, the common coucal (Jerdon I., 348). The Dúns only.
220. *Taccocua sirkee*, the Bengal sirkeer (Jerdon I., 353). The Dúns only.
225. *Æthopyga miles*, the Himalayan red honey-sucker (Jerdon I., 363). The warm valleys only.
227. *Æthopyga gouldii*, the purple-tailed red honey-sucker (Jerdon I., 364). The warm valleys only.
228. *Æthopyga ignicauda*, the fire-tailed red honey-sucker (Jerdon I., 365). The warm valleys only.

229. *Æthopyga nipalensis*, the maroon-backed honey-sucker (Jerdon I., 286). From 2,000 to 6,000 feet.
230. *Æthopyga horsfieldii*, the green-backed honey-sucker (Jerdon I., 287). The warm valleys only.
231. *Æthopyga saturata*, the black-breasted honey-sucker (Jerdon I., 287). From 2,000 to 5,000 feet.
232. *Cinnyris asiatica*, the purple honey-sucker (Jerdon I., 270). Up to 2,000 feet; common.
233. *Cinnyris lotenia*, the large purple honey-sucker (Jerdon I., 272). The Dehra Dún; a rare straggler.
234. *Dicæum erythrorhynchus*, Tickell's flower-pecker (Jerdon I., 274). The Dúns only; not common.
235. *Piprisoma agile*, the thick-billed flower-pecker (Jerdon I., 276). The Dúns and warm valleys.
236. *Myzanthus ignipectus*, the fire-breasted flower-pecker (Jerdon I., 277). Kamaun only; very rare.
237. *Certhia himalayana*, the Himálayan tree-creeper (Jerdon I., 280). From 4,000 to 8,000 feet; common.
238. *Salpornis spilonota*, the spotted grey-creeper (Jerdon I., 282). The Dúns only; rare.
239. *Tichodroma muraria*, the red-winged wall-creeper (Jerdon I., 283). Not uncommon.
240. *Sitta himalayensis*, the white-tailed nuthatch (Jerdon I., 285). From 5,000 to 8,000 feet; common.
241. *Sitta castaneoventris*; the chestnut-bellied nuthatch (Jerdon I., 286). The Dúns only.
242. *Sitta cinnamomeoventris*, the cinnamon-bellied nuthatch (Jerdon I., 287). From 2,000 to 4,000 feet.
243. *Dendrophila frontalis*, the velvet-fronted blue nuthatch (Jerdon I., 288). From 2,000 to 5,000 feet.
244. *Upupa epops*, the European hoopoe (Jerdon I., 290). Not very common.
245. *Upupa ceylonensis*, the Indian hoopoe (Jerdon I., 292). The Dúns and warm valleys; common.
246. *Lanius lahtora*, the Indian grey shrike (Jerdon I., 400). The Dúns only; rare.
247. *Lanius erythronotus*, the rufous-backed shrike (Jerdon I., 402). Up to 4,000 feet; common.
248. *Lanius caniceps*, the pale rufous-backed shrike (S. F. VII., 375). The (64.) Dehra Dún; rare.
249. *Lanius tephronotus*, the grey-backed shrike (Jerdon I., 403). From 2,000 to 4,000 feet; common.
250. *Lanius nigriceps*, the black-headed shrike (Jerdon I., 404). From 2,000 to 5,000 feet; rare.
251. *Lanius vittatus*, the bay-backed shrike (Jerdon I., 405). The Dúns and warm valleys.
252. *Lanius cristatus*, the brown shrike (Jerdon I., 406). In the cold weather only; not common.

265. *Tephrodoris pondiceriana*, the common woodshrike (Jerdon , 419). The Dáns only.
267. (*bis*) *Hemipus capitalis*, the Himalayan pied shrike (S. F. L., 486). The Dáns and up to 5,000 feet; rare.
268. *Volvocivora sykail*, the black-headed cuckoo shrike (Jerdon I., 414). The Dáns and warm valleys; rare.
269. *Volvocivora melaschista*, the dark grey cuckoo shrike (Jerdon I., 415). Up to 7,000 feet; not common.
270. *Graucalus macul*, the large cuckoo shrike (Jerdon I., 417). The Dáns only; rare.
271. *Pericrocotus speciosus*, the large minivet (Jerdon I., 419). Up to 8,000 feet; not uncommon.
273. *Pericrocotus brevirostris*, the short-billed minivet (Jerdon I., 421). Up to 8,000 feet; common.
275. *Pericrocotus roseus*, the rosy minivet (Jerdon I., 423). The Dáns and warm valleys.
276. *Pericrocotus peregrinus*, the small minivet (Jerdon I., 423). The Dáns only; common.
278. *Buchanga atra*, the common drongo-shrike (Jerdon I. 427). Up to 4,000 feet; common.
279. *Dicrurus annectans*, the crow-billed drongo (Jerdon I., 430). In the warm valleys; rare.
280. *Buchanga longicaudata*, the long-tailed drongo (Jerdon I., 430). From 4,000 to 7,000 feet; common.
281. *Buchanga corulescens*, the white-bellied drongo (Jerdon I., 432). The Dáns and warm valleys; rare.
282. *Chaptalia zoeae*, the bronzed drongo (Jerdon I., 433). In the warm valleys; very rare.
284. *Dissemurus grandis*, the large racket-tailed drongo (Jerdon I., 435). In the warm valleys; rare.
286. *Chibia hottentotta*, the hair-crested drongo (Jerdon I., 439). In the warm valleys; rare.
287. *Artamus fuscus*, the ashy swallow shrike (Jerdon I., 441). From 3,000 to 5,000 feet; common.
288. *Muscipeta paradisi*, the paradise flycatcher (Jerdon I., 445). In the Dáns and warm valleys; common.
290. *Myiagra azurea*, the black-naped blue flycatcher (Jerdon I., 450). In the warm valleys; rare.
291. *Leucocerca albicollis*, the white-throated fantail (Jerdon I., 451). From 2,000 to 5,000 feet; common.
292. *Leucocerca aureola*, the white-browed fantail (Jerdon I., 452). The Dáns only; common.
294. *Cheliderynx hypoxantha*, the yellow-bellied fantail (Jerdon I., 455). The warm valleys; rare.
295. *Callicapa ceylonensis*, the grey-headed flycatcher (Jerdon I., 458). Up to 8,000 feet; very common.

296. *Hemichelidon sibiricus*, the sooty flycatcher (Jerdon I., 458). From 6,000 to 10,000 feet; common.
297. *Alseonax latirostris*, the southern brown flycatcher (Jerdon I., 459). From 3,000 to 8,000 feet; common.
301. *Stoporala melanops*, the verditer flycatcher (Jerdon I., 463). From 4,000 to 8,000 feet; common.
304. *Cyornis rubeculoides*, the blue-throated redbreast (Jerdon I., 466). Up to 8,000 feet; not common.
310. *Muscicapula superciliaris*, the white-browed blue flycatcher (Jerdon I., 470). Up to 8,000 feet; common.
314. *Niltava sundara*, the rufous-bellied fairy bluechat (Jerdon I., 473). Up to 5,000 feet; not common.
319. *Siphia strophilata*, the orange gorgetted flycatcher (Jerdon I., 479). From 5,000 to 8,000 feet; very rare.
320. *Siphia leucomelanura*, the slaty flycatcher (Jerdon I., 479). From 5,000 to 7,000 feet; rare.
323. (*bir*). *Erythrosterna parva*, the white-tailed robin flycatcher (Jerdon I., 481. S. F. V., 471). The Dáns; common.
323. (*ter*). *Erythrosterna hyperythra*, the rufous-bellied robin flycatcher (S. F. V., 471). The Dáns; rare.
326. *Erythrosterna maculata*, the little pied flycatcher (Jerdon I., 483). From 3,000 to 6,000 feet; rare.
333. *Troglodytes nipalensis*, the Nepal wren (Jerdon I., 491). From 4,000 to 10,000 feet; rare.
342. *Myiophonus temminckii*, the yellow-bellied whistling thrush (Jerdon I., 500). Common up to 8,000 feet.
345. *Pitta brachyura*, the yellow-breasted ground thrush (Jerdon I., 503). Not rare up to 5,000 feet.
347. *Cinclus asiaticus*, the brown water ouzel (Jerdon I., 506). Common up to 5,000 feet.
350. *Zosterops monticola*, the large brown thrush (Jerdon I., 509). Rare, 6,000 to 8,000 feet.
351. *Cyanocinclus cyanus*, the blue rock thrush (Jerdon I., 511). In the Dáns and low hills in the cold weather.
352. *Petrophila erythrogaster*, the chestnut-bellied thrush (Jerdon I. 514). 5,000 to 8,000 feet; common.
353. *Petrophila elaeorhyncha*, the blue-headed chat thrush (Jerdon I., 515). 3,000 to 8,000 feet; common.
355. *Geocichla citrina*, the orange-headed ground thrush (Jerdon I., 517). Up to 5,000 feet; not common.
356. *Geocichla unicolor*, the dusky ground thrush (Jerdon I., 519). Up to 8,000 feet; common.
357. *Turdalus wardii*, Ward's pied-blackbird (Jerdon I., 520). 5,000 to 8,000 feet; common.
358. *Geocichla dissimilis*, the variable pied-blackbird (Jerdon I., 521). 7,000 feet; very rare.

361. *Merula boubouli*, the grey-winged blackbird (Jerdon I., 525). Up to 8,000 feet; common.
362. *Merula albocincta*, the white-collared ouzel (Jerdon I., 526). 6,000 to 8,000 feet; not rare.
363. *Merula castanea*, the grey-headed ouzel (Jerdon I., 529). 5,000 to 8,000 feet; rare.
365. *Turdus atrogularis*, the black-throated thrush (Jerdon I., 529). Common in the cold weather.
366. *Turdus viscivorus*, the miscel thrush (Jerdon I., 531). 5,000 to 10,000 feet; not common.
370. *Oreocincla mollissima*, the plain-backed mountain thrush (Jerdon I., 533). Very rare.
371. *Oreocincla dauma*, the small-billed mountain thrush (Jerdon I., 533). Up to 8,000 feet; common.
382. *Grammatoptila striata*, the striated jay thrush (Jerdon II., 11). 5,000 to 8,000 feet; not common.
385. *Pyctorhis sinensis*, the yellow-eyed babbler (Jerdon II., 15). Up to 3,000 feet; common.
392. *Stachyris pyrrhops*, the red-billed wren babbler (Jerdon II., 23). 3,000 to 6,000 feet; rare.
403. *Pomatorhinus leucogaster*, Gould's scimitar babbler (Jerdon II., 30). The Dáns and warm valleys; rare.
405. *Pomatorhinus erythrogenys*, the rusty-cheeked scimitar babbler (Jerdon II., 31). 3,000 to 6,000 feet; common.
407. *Garrulax leucolophus*, the white-crested laughing thrush (Jerdon II., 35). The Dáns and warm valleys.
411. *Garrulax albogularis*, the white-throated laughing thrush (Jerdon II., 36). 5,000 to 8,000 feet; common.
415. *Trochalopteron erythrocephalum*, the red-headed laughing thrush (Jerdon II., 43). 5,000 to 8,000 feet; common.
418. *Trochalopteron variegatum*, the variegated laughing thrush (Jerdon II., 45). 2,000 to 5,000 feet; rare.
431. *Trochalopteron rufogulare*, the fufous-chinned laughing thrush (Jerdon II., 47). 2,000 to 5,000 feet; rare.
435. *Trochalopteron lineatum*, the streaked laughing thrush (Jerdon II., 50). 4,000 to 8,000 feet; very common.
437. *Actinodera egerloni*, the rufous bar-wing (Jerdon II., 52). 5,000 to 8,000 feet; rare.
439. *Sibia capistrata*, the black headed sibia (Jerdon II., 54). 4,000 to 8,000 feet; very common.
432. *Malaccocircus terricolor*, the Bengal babbler (Jerdon II., 59). The Dáns only.
434. *Argya malcolmi*, the large grey babbler (Jerdon II., 60). The Dáns only.
438. *Chatarrhina caudata*, the striated bush-babbler (Jerdon II., 67). The Dáns only.
430. *Chatarrhina carilli*, the striated reed-babbler (Jerdon II., 68). The Dáns only.

444. *Hypsipetes psaroides*, the Himalayan black bulbul (Jerdon II., 77). 2,000 to 3,000 feet; common.
447. *Hypsipetes maclelandi*, the rufous-bellied bulbul (Jerdon II., 79). From 2,000 to 3,000 feet; common.
456. *Rubigula flaviventris*, the black-crested yellow bulbul (Jerdon II., 89). 2,000 to 3,000 feet; rare.
458. *Otocompa leucogenys*, the white-checked crested bulbul (Jerdon II., 90). Up to 3,000 feet; common.
461. *Pycnonotus pygmaus*, the common Bengal bulbul (Jerdon II., 92). Up to 7,000 feet; common.
462. *Pycnonotus haemorrhous*, the common Madras bulbul (Jerdon II., 94). The Dáns only.
465. *Phyllornis aurifrons*, the gold-fronted green bulbul (Jerdon II., 99). The Dáns and warm valleys.
466. *Phyllornis hardwickii*, the blue-winged green bulbul (Jerdon II., 100). Up to 6,000 feet, not rare.
468. *Iora typhia*, the white-winged green bulbul (Jerdon II., 103). The Dáns and warm valleys.
470. *Oriolus kundoo*, the Indian golden oriole (Jerdon II., 107). Up to 4,000 feet; common.
471. *Oriolus indicus*, the black-naped Indian oriole (Jerdon II., 109). The Dáns only; rare.
472. *Oriolus melanocephalus*, the black-headed oriole (Jerdon II., 110). The Dáns and warm valleys.
474. *Oriolus trailii*, the maronne oriole (Jerdon II., 112). Kumaon only; rare.
475. *Copsychus saularis*, the magpie robin (Jerdon II., 114). Up to 4,000 feet; common.
476. *Kittacincta macroura*, the shama (Jerdon II., 116). In the Dáns only; very rare.
477. *Myiomeles leucura*, the white-tailed blue-chat (Jerdon II., 118). 2,000 to 3,000 feet; very rare.
480. *Thamnobia cambalensis*, the brown-backed Indian robin (Jerdon II., 122). The Dáns only; common.
481. *Pratincola caprata*, the white-winged black robin (Jerdon II., 123). Up to 5,000 feet; common.
482. *Pratincola indicus*, the Indian bush-chat (Jerdon II., 124). Up to 5,000 feet; common.
486. *Pratincola ferreus*, the dark-grey bush-chat (Jerdon II., 127). Up to 3,000 feet; common.
497. *Ruticilla ruiventris*, the Indian redstart (Jerdon II., 137). The Dáns and warm valleys.
498. *Ruticilla hodgsoni*, Hodgson's redstart (Jerdon II., 138). Near the snows; rare.
499. *Ruticilla erythrogastra*, the white-winged redstart (Jerdon II., 139). Near the snows; rare.
502. *Ruticilla frontalis*, the blue-fronted redstart (Jerdon II., 141). Near the snows; common.

504. *Ruticilla coruicephala*, the blue-headed redstart (Jerdon II, 141). In the higher valleys; common.
505. *Rhyacornis fuliginosus*, the plumbeous water-robin (Jerdon II, 142). Up to the snow level; common.
506. *Chasmarrornis leucocephalus*, the white-capped redstart (Jerdon II, 143). Up to the snow level; common.
507. *Larvivora superciliosa*, the blue woodchat (Jerdon II, 145). In valleys, 3,000 to 6,000 feet.
508. *Ianthia cyanura*, the white-breasted blue woodchat (Jerdon II, 146). From 4,000 to 8,000 feet.
512. *Calliope kamschatkensis*, the common ruby-throat (Jerdon II, 150). The Dúns in the cold weather.
513. *Calliope pectoralis*, the white-tailed ruby-throat (Jerdon II, 151). In the elevated valleys.
514. *Cyanocula suecica*, the Indian blue-throat (Jerdon II, 152). In the Dúns in winter.
515. *Acrocephalus stentorius*, the large red-warbler (Jerdon II, 154). In the Dúns in winter.
516. *Acrocephalus dumetorum*, the lesser red-warbler (Jerdon II, 155). The valleys and lower hills.
516. *Acrocephalus agricolus*, the paddy-field warbler (Jerdon II, 156). The valleys and lower hills.
527. (*bis.*) *Horornis pallidus*, the pale hill-warbler (S. F. III, 241). From 4,000 to 8,000 feet; rare.
530. *Orthotomus sutoria*, the Indian tailor-bird (Jerdon II, 165). The Dúns and warm valleys.
535. *Prinia stewarti*, Stewart's wren-warbler (Jerdon II, 171). The Dúns only; common.
536. *Prinia gracilis*, Franklin's wren-warbler (Jerdon II, 172). Common at moderate elevations.
537. *Prinia cinerocapilla*, Hodgsons' wren-warbler (Jerdon II, 172). The Dúns and lower hills.
538. *Prinia hodgsoni*, the Malabar wren-warbler (Jerdon II, 173). Probably identical with No. 536.
539. *Cisticola curvifrons*, the rufous grass-warbler (Jerdon II, 174). The Dúns only; rare.
543. *Drymœca incrunata*, the common wren-warbler (Jerdon II, 176). The Dúns only; common.
544. (*bis.*) *Drymœca rufescens*, the great rufous wren-warbler (S. F. I., 437). The Dúns only; rare.
547. *Suya crinigera*, the brown mountain wren-warbler (Jerdon II, 183). At 3,000 to 3,800 feet.
549. *Suya strigularis*, the black-breasted wren-warbler (Jerdon II, 184). From 4,000 to 6,000 feet; rare.
551. *Franklinia buehaeni*, the rufous-fronted wren-warbler (Jerdon II, 186). The Dúns only; rare.

553. *Hypothymis rama*, Sykes' warbler (Jerdon II., 189). The Dáns only ; not common.
554. *Phylloscopus tristis*, the brown tree-warbler (Jerdon II., 190). The Dáns in the cold weather.
555. *Phylloscopus magnirostris*, the large-billed tree-warbler (Jerdon II., 191). Not uncommon.
556. *Phylloscopus nitidus*, the bright-green tree-warbler (Jerdon II., 193). Not common.
557. *Phylloscopus viridanus*, the greenish tree-warbler (Jerdon II., 193). Common in the cold-weather.
558. (64.) *Phylloscopus tytleri*, Tytler's tree-warbler (S. F. III., 243N). Kumaun only ; rare.
559. *Phylloscopus affinis*, Tickell's tree-warbler (Jerdon II., 194). In the cold-weather ; not common.
560. *Phylloscopus indicus*, the olivaceous tree-warbler (Jerdon II., 194). In the cold-weather ; rare.
561. *Reguloides occipitalis*, the large crowned warbler (Jerdon II., 196). Dehra Dún ; very rare.
562. (64.) *Reguloides humil*, Brook's tree-warbler (S. F. VII., 131). In the Dáns only ; common in winter.
563. *Reguloides pruregalus*, the yellow-rumped warbler (Jerdon II., 197). Not uncommon.
564. *Reguloides viridipennis*, the green-winged warbler (Jerdon II., 198). Not uncommon.
565. *Callopetta burkii*, the black-browed warbler (Jerdon II., 199). In the higher valleys ; rare.
566. *Abrornis schisticeps*, the black-eared warbler (Jerdon II., 201). 5,000 to 8,000 feet ; common.
567. *Abrornis albosuperciliaris*, the white-browed warbler (Jerdon II., 202). Very common.
568. *Regulus himalayensis*, the Himalayan fire-crest (Jerdon II., 206). 8,000 to 10,000 feet ; rare.
569. *Sylvia affinis*, the allied grey warbler (Jerdon II., 209). The Dáns only in the cold-weather.
570. *Henicurus maculatus*, the spotted fork-tail (Jerdon II., 212). Up to 6,000 feet ; common.
571. *Henicurus schistaceus*, the slaty-backed fork-tail (Jerdon II., 214). Kumaun only ; rare.
572. *Henicurus acouleri*, the short-tailed fork-tail (Jerdon II., 214). 2,000 to 6,000 feet ; common.
573. *Motacilla madraspatensis*, the pied wagtail (Jerdon II., 217). The Dáns only ; common.
574. (64.) *Motacilla hodgsoni*, Hodgson's pied wagtail (S. F. I., 26). Up to 12,000 feet ; not common.
575. *Motacilla personata*, the black-faced wagtail (Jerdon II., 218). The Dáns only in the winter.

592. *Calobates melanope*, the grey and yellow wagtail (Jerdon II., 220). Up to 10,000 feet; common.
593. *Budytes cinereocapilla*, the grey-capped field wagtail (Jerdon II., 222; S.F. VI., 363). The Dúns only.
593. (*bis.*) *Budytes melanocephala*, the black-headed field wagtail (S. F. VI., 363). The Dúns only.
593. (*ter.*) *Budytes flava*; the yellow wagtail (S. F. VI., 363). The Dúns only; common.
594. *Budytes calcarata*; the black and yellow wagtail (S. F. VII., 401). Up to 8,000 feet; not common.
594. (*bis*) *Budytes citreola*, the grey-headed yellow wagtail (S. F. VII., 401). The Dúns in winter.
596. *Anthus maculatus*; the Indian tree-pipit (Jerdon II., 228). Up to 8,000 feet; not rare.
597. *Anthus arboreus*; the tree pipit (Jerdon II., 229). In the Dúns in the cold weather.
600. *Corydalis rufina*, the Indian titlark (Jerdon II., 232). The Dúns and warm valleys.
604. *Agrodroma sordida*; the brown rock-pipit (Jerdon II., 236). Up to 3,000 feet; not common.
605. *Anthus rosaceus*, the vinous-throated pipit (Jerdon II., 237). 3,000 to 12,000 feet; common.
606. *Heterura sylvana*, the upland pipit (Jerdon II., 239). 3,000 to 8,000 feet; common.
607. *Cochoa purpurea*, the purple thrush-tit (Jerdon II., 243). 3,000 to 8,000 feet; rare.
608. *Cochoa viridis*, the green thrush-tit (Jerdon II., 243). 3,000 to 8,000 feet; rare.
609. *Pterathius erythropterus*, the red-winged shrike-tit (Jerdon II., 245). 4,000 to 8,000 feet; rare.
614. *Leiothrix lutea*, the red-billed hill-tit (Jerdon II., 250). Up to 8,000 feet; not uncommon.
616. *Siva strigula*, the stripe-throated hill-tit (Jerdon II., 252). 5,000 to 9,000 feet; not common.
617. *Siva cyanoptera*, the blue-winged hill-tit (Jerdon II., 253). Kumaon 7,000 feet; rare.
623. *Ixulus flavicollis*, yellow-naped flowerpecker (Jerdon II., 255). 6,000 to 8,000 feet; not rare.
626. *Yuhina occipitalis*, the slatey-headed hill-tit (Jerdon II., 261). Kumaon, 8,000 feet; rare.
631. *Zosterops palpebrosus*, the white-eyed tit (Jerdon II., 265). Common up to 7,000 feet.
632. *Sylviparus modestus*, the yellow-browed flowerpecker (Jerdon II., 267). 4,000 to 8,000 feet; not common.
634. *Egithaloeus erythrocephalus*, the red-headed tit (Jerdon II., 270). 4,000 to 8,000 feet; very common.

638. *Lophophanes melanolophus*, the crested black-tit (Jerdon II, 275). 5,000 to 8,000 feet; common.
640. *Lophophanes rufonuchalis*, the Simla black-tit (Jerdon II, 274). 9,000 to 12,000 feet; not rare.
644. *Parus monticolus*, the green-backed tit (Jerdon II, 277). 4,000 to 8,000 feet; very common.
645. *Parus nipalensis*, the Indian grey-tit, (Jerdon II., 278; S.F. VII., 220N). Up to 7,000 feet, not common.
647. *Macholophus xanthogenys*, the yellow-cheeked tit (Jerdon II., 279). 4,000 to 8,000 feet; not very common.
656. *Corvus tibetanus*, the Thibet raven (Jerdon II., 294). At great elevations; rare.
660. *Corvus culminatus*, the Indian corbie (Jerdon II., 295). The Dúns only; common.
661. *Corvus intermedius*, the blackhill crow (Jerdon II., 297). 4,000 to 9,000 feet; common.
663. *Corvus splendens*, the common Indian crow (Jerdon II., 298). Up to 5,000 feet; common.
665. *Nucifraga hemispha*, the Himalayan nut-cracker (Jerdon II, 304). 6,000 to 10,000 feet; common.
669. *Garrulus bispecularis*, the Himalayan jay (Jerdon II., 307). 5,000 to 8,000 feet; common.
670. *Garrulus lanceolatus*, the black-throated jay (Jerdon II., 308). 4,000 to 8,000 feet; very common.
671. *Urocissa occipitalis*, the red-billed blue magpie (Jerdon II., 309). 3,000 to 5,000 feet; common.
673. *Cissa chinensis*, the green jay (Jerdon II., 312). In Kumaon only; up to 7,000 feet; rare.
674. *Dendrocitta rufa*, the common Indian magpie (Jerdon II, 314). The Dúns only; common.
676. *Dendrocitta himalayensis*, the Himalayan magpie (Jerdon II., 316). Up to 5,000 feet; common.
679. *Fregilus himalayanus*, the Himalayan chough (Jerdon II., 319). At high elevations; rare.
681. *Sturnus vulgaris*, the common starling (Jerdon II., 321). The Dúns in winter only; rare.
683. *Sturnopastor contra*, the pied starling (Jerdon II., 322). The Dúns only; common.
684. *Acridotheres tristis*, the common mynah (Jerdon II., 325). Up to 7,000 feet; common.
686. *Acridotheres fuscus*, the jungle mynah (Jerdon II., 327). Up to 7,000 feet; common.
687. *Sturnia pagodarum*, the Brahminy mynah (Jerdon II., 328). The Dúns only; not common.
688. *Sturnia malabarica*, the grey-headed mynah (Jerdon II., 329). The lower hills; rare.

690. *Pastor roseus*, the rose-cloured starling (Jerdon II., 333). The Dáns only ; common.
691. *Saraglossa spiloptera*, the spotted-winged stare (Jerdon II., 336). Up to 6,000 feet ; common.
692. *Eulabes intermedia*, the Nepal hill mynah (Jerdon II., 339). The Kumaon bháhar ; rare.
694. *Ploceus philippinus*, the common weaver-bird (Jerdon II., 343 ; S. F. VI. 399). The Dáns ; common.
694. (*dis*) *Ploceus megarhynchus*, the great billed weaver-bird (S. F. III., 406). Kumaon bháhar ; rare.
695. *Ploceus manyar*, the striated weaver-bird (Jerdon II., 346). The Dáns only ; common.
698. *Munia rubronigra*, the chestnut-bellied-munia (Jerdon II., 350). The Dáns only ; rare.
699. *Munia punctulata*, the spotted munia (Jerdon II., 354). Up to 6,000 feet ; not uncommon.
702. *Munia acuticauda*, the Himalayan munia (Jerdon II., 356). Up to 5,000 feet ; not common.
703. *Munia malabarica*, the plain brown munia (Jerdon II., 357). The Dáns only ; common.
704. *Estrela amandava*, the red wax bill (Jerdon II., 359). The Dáns to warm valleys ; rare.
706. *Passer indicus*, the Indian house-sparrow (Jerdon II., 362). Up to 7,000 feet ; very common.
708. *Passer cinnamomensis*, the cinnamon-headed sparrow (Jerdon II., 365). 4,000 to 7,000 feet ; common.
710. *Passer montanus*, the mountain sparrow (Jerdon II., 366). From 3,000 to 7,000 feet ; rare.
711. *Gymnoris flavicollis*, the yellow-throated sparrow (Jerdon II., 368). Up to 4,000 feet ; common.
714. *Emberiza stracheyi*, the white-necked bunting (Jerdon II., 373). From 5,000 to 10,000 feet ; rare.
716. *Emberiza huttoni*, the grey-necked bunting (Jerdon II., 373). Bhagirathi valley ; rare.
719. *Emberiza fucata*, the greyheaded bunting (Jerdon II., 375). Káisi on the Jumna ; not rare.
720. *Emberiza pusilla*, the dwarf bunting (Jerdon II., 376). Inserted on Jerdon's authority.
724. *Melophas melanicterus*, the crested black bunting (Jerdon II., 381). The Dáns and warm valleys.
725. *Hesperiphona laterioidea*, the black and yellow grosbeak (Jerdon II., 384.) Garhwál, near the snows.
726. *Hesperiphona affinis*, the allied grosbeak (Jerdon II., 385). Kumaon, near the snows.
727. *Mycerobas melanozanthus*, the spotted winged grosbeak (Jerdon II., 386). Dehra Dán, up to 10,000 feet ; rare.

728. *Mycrobas carnipes*, the white-winged crossbeak (Jerdon II., 367). Kumaon, near the snows ; rare.
729. *Pyrrhula erythrocephala*, the red-headed bullfinch (Jerdon II., 389). 6,000 to 10,000 feet ; rare.
738. *Carpodacus erythrinus*, the common rosefinch (Jerdon II., 398). Up to 10,000 feet ; not rare.
739. *Propasser rhodopeplus*, the spotted-winged rosefinch (Jerdon II., 400). Mussoorie ; rare.
740. *Propasser rhodochlamys*, the red-mantled rosefinch (Jerdon II., 401). Garhwál ; rare.
742. *Propasser rhodochrous*, the pink-browed rosefinch (Jerdon II., 403). 5,000 to 10,000 feet ; not rare.
743. *Propasser pulcherrimus*, the beautiful rosefinch (Jerdon II., 403) Kumaon (*teste* Jerdon).
743. (*bis.*) *Propasser ambiguus*, Wilson's rosefinch (S. F. II., 326). Garhwál 6,000 to 10,000 feet.
746. *Callacanthus burtoni*, the red-browed finch (Jerdon II., 407). The interior of Garhwál ; rare.
749. *Carduelis caniceps*, the Himálayan goldfinch (Jerdon II., 408). 6,000 to 10,000 feet ; common.
750. *Hypacanthus spinoides*, the Himálayan siskin (Jerdon II., 409), 4,000 to 9,000 feet ; not common.
81. *Metoponia pusilla*, the gold-headed finch (Jerdon II., 410) Common in the interior of Garhwál.
752. *Fringilla montifringilla*, the mountain finch (Jerdon II., 412). Mussoorie (*teste* Hutton) ; doubtful.
753. (*bis.*) *Fringilla sordida*, the Himálayan larkfinch (S. F. I., 41). In the interior of Garhwál.
754. *Mirafra assamica*, the Bengal bushlark (Jerdon II., 416). In the Dáns ; very local.
754. (*bis.*) *Mirafra immaculata*, the mountain bushlark (S. F. T., 41). Near Chakráta (Marshall) ; rare.
756. *Mirafra erythroptera*, the red-winged bushlark (Jerdon II., 416). In the Dáns only ; not common.
760. *Pyrrhuloxia grisea*, the black-bellied finch lark (Jerdon II., 424). In the Dáns only ; common.
761. *Calandrella brachydactyla*, the short-toed lark (Jerdon II., 426). The Dáns only, in winter ; rare.
763. *Otocoris penicillata*, the horned lark (Jerdon II., 429). In the interior of Kumaon.
766. *Alauda dulcivox*, the Himálayan skylark (Jerdon II., 433 ; S. F. I. 39). At all elevations ; not common.
767. *Alauda galgula*, the Indian skylark (Jerdon II., 434). The Dáns only ; rare.
772. *Crocopus phœnicopterus*, the Bengal green pigeon (Jerdon III., 447). The Dáns only ; not common.

773. *Crocopus chlorigaster*, the southern green pigeon (Jerdon III., 448). The Dáns only ; not common.
776. *Sphenocercus sphenurus*, the kokla green pigeon (Jerdon III., 453). 4,000 to 8,000 feet ; common.
778. (*dis.*) *Sphenocercus minor*, the lesser kokla (S. F. III., 255). In the warm valleys of Garhwál.
783. *Alsocomus hodgsoni*, the speckled wood pigeon (Jerdon III., 463). Interior of Kumaon and Garhwál ; rare.
784. *Palumbus casiotis*, the Himálayan cushat (Jerdon III., 464). Interior of Kumaon and Garhwál ; rare.
787. *Palumbœna eversmanni*, the Indian stock pigeon (Jerdon III., 467). The Dáns only, in winter ; rare.
788. *Columba intermedia*, the Indian rock pigeon (Jerdon III., 469). The Dáns only ; common.
789. *Columba rupestris*, the blue hill pigeon (Jerdon III., 470). Rare ; probably migratory.
790. *Columba leucocota*, the white-bellied pigeon (Jerdon III., 471). Near the snows.
792. *Turtur pulchratus*, the ashy turtle dove (Jerdon III., 476 ; S. F. VI., 421). 5,000 to 10,000 feet ; common.
794. *Turtur cambalensis*, the brown turtle dove (Jerdon III., 478). The Dáns and lower hills ; common.
795. *Turtur suratensis*, the spotted dove (Jerdon III., 479). Up to 6,000 feet ; common.
796. *Turtur risoria*, the common ring dove (Jerdon III., 481). Up to 4,000 feet ; common.
797. *Turtur humilis*, the red turtle dove (Jerdon III., 482). The Dáns and warm valleys ; rare.
798. *Chalcophaps indica*, the bronze-winged dove (Jerdon III., 484). Up to 4,000 feet ; not common.
802. *Pterocles exustus*, the common sandgrouse (Jerdon III., 502). The Dáns only ; rare.
802. (*dis.*) *Syrhaptes tibetanus*, the Tibetan sandgrouse (S. F. VII., 425). On the northern borders.
803. *Pavo cristatus*, the common peacock (Jerdon III., 506). The Dáns only ; common.
804. *Lophophorus impeyanus*, the monál (Jerdon III., 510). From 8,000 to 12,000 feet ; not uncommon.
805. *Cerionis satyra*, the Sikkim horned pheasant (Jerdon III., 516). From 9,000 feet to snow line.
808. *Pucrasia macrolopha*, the koklás pheasant (Jerdon III., 524). 6,000 to 10,000 feet ; not rare.
809. *Phasianus wallichii*, the chíf pheasant (Jerdon III., 527). 5,000 to 10,000 feet ; scarce.
810. *Euplocamus albocristatus*, the white-crested kalij pheasant (Jerdon III., 532). Up to 4,000 feet ; common.

812. *Gallus ferrugineus*, the red jungle fowl (Jerdon III., 536). The Dúns and warm valleys.
816. *Tetraogallus himalayensis*, the Himálayan snowcock (Jerdon III., 549). At great elevations.
817. *Lerwa nivicola*, the snow partridge (Jerdon III., 555). Near the snow line.
818. *Fraucolinus vulgaris*, the black partridge (Jerdon III., 558). Up to 5,000 feet ; common.
820. *Caccabis chukor*, the chukor (Jerdon III., 564). 6,000 to 9,000 feet ; not common.
822. *Ortygornis ponticeriana*, the grey partridge (Jerdon III., 569). In the Dúns only ; common.
823. *Ortygornis gularis*, the kyah partridge (Jerdon III., 572). Kumaon Tarai ; rare.
823. (*bis*) *Perdix hodgsoniae*, Mrs. Hodgson's partridge (S. F. VII., 432). Above 17,000 feet ; very rare.
824. *Arboricola torquolus*, the black-throated hill partridge (Jerdon III., 577). 4,000 to 9,000 feet ; common.
825. *Arboricola rufogularis*, the rufous-throated hill partridge (Jerdon III., 578). Kumaon only ; rare.
826. *Ferdicula asiatica*, the jungle bush-quail (Jerdon III., 581). The Dúns and warm valleys.
829. *Coturnix communis*, the corn quail (Jerdon III., 586). Up to 4,000 feet ; common.
830. *Coturnix coromandelica*, the rain quail (Jerdon III., 588). The Dúns only ; common.
831. *Excalfatoria chinensis*, the blue-throated quail (Jerdon III., 591). The Dúns only ; rare.
832. *Turnix taigoor*, the black-breasted bustard quail (Jerdon III., 595). The Dúns ; common.
834. *Turnix joudera*, the larger button quail (Jerdon III., 599). Kumaon ; lower hills.
835. *Turnix dussumieri*, the button quail (Jerdon III., 600). The Dehra Dún only ; not common.
838. *Syphectides bengalensis*, the florikin (Jerdon III., 616). The Dúns only ; not rare.
839. *Syphectides aurita*, the lesser florikin (Jerdon III., 619). The Dúns only ; rare.
843. *Glaucala lactea*, the small swallow plover (Jerdon III., 632). The Dúns only ; not common.
849. *Ægialitis eurypica*, the Indian ringed plover (Jerdon III., 640). The Dúns only ; rare.
852. *Chettusia gregaria*, the black-sided lapwing (Jerdon III., 644). Rare ; migrat. ry.
856. *Chettusia leucura*, the white-tailed lapwing (Jerdon III., 645). The Dúns ; rare ; migrat. ry.

855. *Lobivanelus indicus*, the red wattled lapwing (Jerdon III., 648). Up to 4,000 feet; common.
856. *Sarcophorus bilobus*, the yellow wattled lapwing (Jerdon III., 649). The Dúns; a rare straggler.
857. *Hoplopterus ventralis*, the spur-winged lapwing (Jerdon III., 650). By the big rivers.
858. *Esacus recurvirostris*, the great stone-plover (Jerdon III., 652). The Dúns; a rare straggler.
859. *Edicnemus crepitans*, the stone-plover (Jerdon III., 654). The Dúns only; not common.
864. *Grus leucogeranus*, the large white crane (Jerdon III., 663). Migrating; a rare straggler.
865. *Grus cinerea*, the common crane (Jerdon III., 664). An occasional cold-weather migrant.
866. *Anthropoides virgo*, the demoiselle crane (Jerdon III., 666). An occasional cold-weather migrant.
867. *Scopolax rusticola*, the woodcock (Jerdon III., 670). Up to 12,000 feet; not common.
868. *Gallinago nemoricola*, the wood snipe (Jerdon III., 672). The Dúns; not common.
869. *Gallinago solitaria*, the Hímalayan solitary snipe (Jerdon III., 673). Up to 12,000 feet; rare.
871. *Gallinago scotopacinus*, the common snipe (Jerdon III., 674). The Dúns; common in winter.
872. *Gallinago gallinula*, the jack snipe (Jerdon III., 675). The Dúns; common in winter.
873. *Rhynchœa bengalensis*, the painted snipe (Jerdon III., 677). The Dúns only; not rare.
879. *Ibidorhynchus struthersii*, the red-billed curlew (Jerdon III., 685). In the interior; rare.
880. *Maechetes pugnax*, the ruff (Jerdon III., 687). The Dúns only; in the winter.
884. *Tringa minuta*, the little stint (Jerdon III., 690). In the Dúns in winter; occasionally.
885. *Tringa temminckii*, the white tailed stint (Jerdon III., 691). In the Dúns, in winter; occasionally.
891. *Actitis glareola*, the spotted sandpiper (Jerdon III., 697). In the Dúns in winter; occasionally.
892. *Actitis ochropus*, the green sandpiper (Jerdon III., 698). An occasional migrant.
893. *Actitis hypoleucos*, the common sandpiper (Jerdon III., 699). Along the shores of rivers.
894. *Totanus glottis*, the greenshanks (Jerdon III., 700). An occasional migrant.
895. *Totanus stagnatilis*, the little greenshanks (Jerdon III., 701). A rare migrant.

896. *Totanus fuscus*, the spotted redshank (Jerdon III., 702). A rare migrant.
897. *Totanus calidris*, the redshank (Jerdon III. 702). A rare migrant.
898. *Himantopus candidus*, the stilt (Jerdon III., 704). A rare migrant in the Dúns.
900. *Metopidius indicus*, the bronze-winged jacana (Jerdon III, 708). The Kumaun Taráí and Dúns.
901. *Hydrophasianus chirurgus*, the pheasant-tailed jacana (Jerdon III, 709). The Dúns and warm valleys.
903. *Fulica atra*, the baldcoot (Jerdon III., 715). The Dúns and warm valleys.
905. *Gallinula chloropus*, the water-hen (Jerdon III, 718). Up to 5,000 feet ; common.
907. *Erythra phonicura*, the white-breasted water-hen (Jerdon III., 720). In the Dúns ; common.
908. *Porzana akool*, the brown rail (Jerdon III., 722). The Dúns ; rather rare.
910. *Porzana ballioni*, Ballion's crane (Jerdon III., 723). Up to 5,000 feet ; not common.
911. *Porzana fusca*, the ruddy rail (Jerdon III., 724). Bhím Táí ; rare.
916. *Leptoptilus javanicus*, the hair-crested stork (Jerdon III, 732). The Dúns only ; rare.
917. *Myateria australis*, the black-necked stork (Jerdon III., 734). The Dúns only ; rare.
918. *Ciconia nigra*, the black stork (Jerdon III., 735). The Dúns only ; rare.
919. *Ciconia alba*, the white stork (Jerdon III, 736). The Dúns only ; rare.
920. *Ciconia episcopa*, the white-necked stork (Jerdon III., 737). The Dúns only ; rare.
923. *Ardea cinerea*, the blue heron (Jerdon III., 741). The Dúns and lower hills ; rare.
924. *Ardea purpurea*, the purple heron (Jerdon III., 743). The Dúns only ; rare.
925. *Herodias alba*, the large egret (Jerdon III., 744). The Dúns only ; rare.
926. *Herodias intermedia*, the smaller egret (Jerdon III., 746). The Dúns only.
927. *Herodias garzetta*, the little egret (Jerdon III., 746). The Dúns only ; rare.
929. *Euphus coromandus*, the cattle egret (Jerdon III., 749). The Dúns only.
930. *Ardeola grayi*, the pond heron (Jerdon III., 751). The Dúns only ; common.
931. *Batorides javanica*, the little green heron (Jerdon III., 752). The Dúns only.

933. *Ardeetta cinnamomea*, the chestnut bittern (Jerdon III., 755). Bhfm Tál ; common.
936. *Botaurus stellaris*, the bittern (Jerdon III., 757) The Dúns only ; rare.
937. *Nycticorax griseus*, the night heron (Jerdon III., 758). The Dúns and warm valleys ; rare.
938. *Tantalus leucocephalus*, the pelican ibis (Jerdon III., 761). The Dúns only ; rare.
941. *Threskiornis melanocophalus*, the white ibis (Jerdon III., 768). The Dúns only ; rare.
942. *Geronticus papillosus*, the black ibis (Jerdon III., 769). The Dúns only ; rare.
945. *Anser cinereus*, the grayleg goose (Jerdon III., 779). Migratory ; not common.
949. *Anser indicus*, the barred-headed goose (Jerdon III., 782). An occasional migrant.
950. *Sarkidiornis melanotus*, the black-backed goose (Jerdon III., 785). The Dúns only.
951. *Nettapus coromandelianus*, the cotton teal (Jerdon III., 786). The Dúns only.
952. *Dendrocygna javanica*, the whistling teal (Jerdon III., 789). The Dúns only.
953. *Dendrocygna fulva*, the large whistling teal (Jerdon III., 790). A straggler from the east.
954. *Casarca rutila*, the ruddy sheldrake (Jerdon III., 791) An occasional migrant
957. *Spatula clypeata*, the shoveller (Jerdon III., 796). A cold weather migrant.
958. *Anas boschas*, the mallard (Jerdon III., 796). An occasional migrant.
959. *Anas pœclorhyncha*, the spotted-billed duck (Jerdon III., 799). The Dúns only.
961. *Chaulelasmus streperus*, the gadwall (Jerdon III., 802). An occasional migrant.
962. *Dafila acuta*, the pin-tailed duck (Jerdon III., 803). An occasional migrant.
964. *Querquedula crecca*, the common teal (Jerdon III., 806). A regular migrant.
965. *Querquedula circis*, the blue-winged teal (Jerdon III., 807). A regular migrant.
967. *Branta rufina*, the red-crested pochard (Jerdon III., 811). An occasional migrant.
968. *Fuligula ferina*, the red-headed pochard (Jerdon III., 812). A rare migrant.
969. *Fuligula nyroca*, the white-eyed duck (Jerdon III., 813). An occasional migrant.

973. *Mergus merganser*, the merganser (Jerdon III., 817). On the large rivers; common.
974. *Podiceps cristatus*, the crested grebe (Jerdon III., 821). A rare straggler from the east.
975. *Podiceps minor*, the little grebe (Jerdon III., 822). Up to 4,000 feet; common.
985. *Sterna seena*, the large river tern (Jerdon III., 838). The Dáns only; rare.
987. *Sterna javanica*, the black-bellied tern (Jerdon III., 840). The Dáns only; not common.
1003. *Pelecanus javanicus*, the lesser white pelican (Jerdon III., 857). An occasional migrant.
1004. *Pelecanus philippensis*, the grey pelican (Jerdon III., 858). An occasional migrant.
1005. *Graculus carbo*, the large cormorant (Jerdon III., 861). On the large rivers; common.
1007. *Graculus javanicus*, the little cormorant (Jerdon III., 863). The Dáns only; not rare.
1008. *Plotus melanogaster*, the Indian snake-bird (Jerdon III., 865). The Dáns only.

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REPTILES.

Reptiles are vertebrate animals that breathe by lungs and are cold-blooded and for the most part oviparous. They include frogs, toads, lizards, chameleons, salamanders, tortoises, turtles and serpents and are very widely and commonly distributed throughout India. When Dr. Günther wrote his great work (1864) on Indian reptiles, 282 species of snakes were recorded from India including British Burma, of which 79 species were venomous, but of the latter 44 were marine snakes (*Hydrophidae*) and of the remainder 17 were arboreal species,

reducing the venomous terrestrial snakes to 18, of which only six are at all common. Theobald in his "Catalogue of the reptiles of British India," published in 1876, omits the marine snakes and describes 188 species, of which only 33 are venomous. The following list only includes species actually collected by Dr. Watson in Kumaon and of the 23 recorded, eight are venomous, a proportion not found in the plains of India. A reference is given under each species to Theobald's work, where a description will be found.

REPTILIA.

Order SAURIA or Land Lizards.

Group *Leptoglossæ*.

Varanus Dracana, Linn.: common water lizard, attains to four feet in length, brownish olive colour, dotted with black scales : common near rivers. Th. 38.

Mocoa himalayana, Günth.: four inches long, of which tail is half: colour above greenish olive, with a few interrupted series of dark and whitish dots ; a dark lateral band from nose through eyes, margined above with white : common. Th. 57.

Mocoa sacra, Stol.: body 1·37, tail 2 inches : colour light bronze brown, with a few dark brown spots accompanied by one or two indistinct pale spots scattered on head and body : very common. Th. 57.

Group *Pachyglossæ*.

Hemidactylus maculatus, D. et B.: length 5½ inches : colour brownish olive or dark brown above, with darker spots, bands or streaks : occurs at low levels. Th. 75.

Gymnodactylus Launderanus, Stol.: length about 4 inches : colour greenish brown, densely marbled and spotted with dark brown : rare, occurs in Almora. Th. 81.

Sitana pondiceriana, Cuv.: about 5½ inches, fawn-coloured with rhomboidal dark spots on the back and a pale yellowish streak from below the eye through the ear to the loins : frequent. Th. 102.

Calotes versicolor, Daud.: the blood-sucker ; grows 14 to 16 inches ; in summer, the males have the body red, head and neck yellowish picked out with red : very common up to 4,000 feet. Th. 109.

Stellio tuberculatus, Gray: body 5 and tail $8\frac{1}{2}$ inches : colour dark olive : very common up to 5,000 feet. Th. 116.

Stellio melanurus, Blyth : body 3·7 and tail 7·7 inches : colour olive grey : somewhat rare. Th. 117.

Stellio Dayanus, Stol.: body 6 and tail 12 inches : colour in adults blackish : found in the Bhábar. Th. 117.

Order OPHIDIA or Snakes.

Group 1.—Harmless colubrine snakes.

Typhlops bothriorhynchus, Günth.: grows to 11 inches ; brown above and below or with the terminal half of scales slightly paler : occurs in Bhábar. Th. 122.

Typhlops tenuicollis, Peters : colour olive, browner above, yellowish below : Bhábar. Th. 123.

Typhlops porrectus, Stol.: grows to 11 inches : colour above pale chocolate or leaden brown above shading into paler below : Bhábar: Th. 124.

Simotes Russellii, Daud.: grows to 27 inches : colour brownish olive with three dark arrow-shaped bands on the head very distinct and body crossed with about twenty white-edged black bars : belly yellow : very common on grassy slopes. Th. 150.

Simotes punctulatus, Günth.: grows to 36 inches : colour brown either crossed by numerous straight light, black edged bands, about two scales broad or crossed by irregular lines formed by the black edges of some scales or with some twenty-two pairs of pale black-edged spots down the back, more or less confluent : rare. Th. 152.

Ablabes tenuiceps, Blyth : grows to 14 inches : colour above uniform blackish ash, below whitish : frequent. Th. 154.

Ablabes Rappii, Günth.: grows to 23 inches : colour uniform dark bronze brown or blackish above, whitish below : common. Th. 154.

Ablabes collaris, Gray : grows to 32 inches : colour brown above, white below with black dots ; a black collar yellow margined behind on the nape sometimes with a number of black dots : common. Th. 156.

Compsosoma semifasciatum, Blyth : colour above pale olive grey transversely dark barred and spotted ; a horse-shoe mark with the

ends directed backwards on the occipitals ; a pale, elongate, lateral ocellus on each occipital : belly whitish or with a slight dusky tinge : common. Th. 164.

Compsosoma Hodgsonii, Günth.: grows to 63½ inches : colour uniform brownish olive : skin and margin of some scales black ; lower parts yellowish : common. Th. 166.

Ptyas mucosus, Linn.: the rat-snake or *dhdman* of the plains ; grows to 91 inches ; colour light brownish olive ; scales with dusky margins producing a reticulated appearance on the hind part of the body and the pointed tail : very common. This with *S. Russellii* comprise nineteen-twentieths of all the snakes killed in the hills. Th. 168.

Tropidonotus platyceps, Blyth : grows to 30 inches : colour in males above, dark brown, with a long elliptical mark on the neck and two rows of small blackish spots along the back anteriorly : below yellowish finely mottled with dusky green and a distinct blackish band on each side : a coral red band along the ends of the ventrals : common on ground under trees. Th. 174.

Psemmophis condanarius, Merr.: grows to 40 inches : colour buff or yellowish : isabelline brown with a dark stripe, two broad scales down either side of the back from head to tail and a broader dark stripe on either side of the belly which is yellowish : common. Th. 187.

Lycodon striatus, Shaw : brown or black barred with yellow, the bars being broken up on the sides and a bright yellow collar on the neck : grows to about 20 inches ; frequent. Th. 199.

Python molurus, Linn.: *ajgar*, *chardo* in Kumaun ; grows to about 30 feet, but specimens over 20 feet are rare ; have seen one of 25 feet killed in the Eastern Dún of Dehra ; coloration like the *Daboia*, but several shields on the head and scales in 65 rows round the middle of the body : common up to 5,000 feet : seen in Bhábar, at Ukhimath and below Táungnáth. Th. 206.

Group 2.—*Venomous colubrine snakes.*

Naja tripudians, Merr.: cobra, known as *kobra*, *ndg*, *kála-samp*, *phanwala* ; grows to 70 inches and is very common in the hills. Neck dilatible into a hood ; scales smooth in 15 rows on the body,

but more numerous on the neck : nostril between two shields. Colour very variable from pale yellowish to pale and dark brown and black. The spectacle marks on the hood also vary in development and are sometimes replaced by a pale oval eye-shaped mark with a dark centre. Th. 208.

Naja Elaps, Schl.: the *ashuriya* of the plains ; grows up to 200 inches, has been identified from Pithoragarh and Káladhúngi and occurs also in the eastern Bhábar. It is difficult to distinguish between young specimens and the cobra ; they are, however, of a pure jet black. The adult female is olive brown with paler cross bands deeply edged with black : beneath white mottled with black about the tail ; throat yellow. Th. 209.

Collophis MacClellandii, Reinh.: grows to about 30 inches and is rare in Kumaon. Body and tail reddish brown with generally a black vertebral line from the nape to the tip of the tail : head and neck black, with a yellow bar behind the eyes ; belly yellowish with black cross bands or quadrangular spots. Sometimes the belly bars are alternately short and long, giving the appearance of a chain of supra-abdominal spots. Tail black ringed or sometimes without rings and belly only spotted and sometimes the vertebral line is absent and the body encircled with black rings. Th. 214.

Bungarus cœruleus, Schn.: the *karait* of the plains and here frequent in the valleys. Colour above deep lustrous blue-black uniform or streaked and reticulated with white ; below white ; grows to 54 inches. Compared with the cobra it is a sluggish snake and does not possess a hood but like most snakes, however, it has the power, when irritated of compressing laterally the anterior six inches of its body. Th. 215.

Group 3.—*Venomous viperine snakes.*

Daboia Russellii, Shaw : grows to 54 inches and is common in the hills. Colour above greyish or reddish brown with three rows of blackish-brown annular ocelli each surrounded by an inner white and an outer black ring down the back and sides : the vertebral series ovate, the others circular and sometimes with supplementary ocelli of small size interspersed below between the others. A broad arrow mark on the head formed by two pale lines from the snout over the eyes to the temporal region. Rostral and labials yellowish

with brown margins. Belly yellowish or marbled with brown. Th. 217.

Group 4.—*Venomous pitted vipers.*

Trimesurus carinatus, Gray : colour above uniform grass green paler below or whitish : tail yellowish or rusty : grows to 37 inches This is one of the handsomest of the arboreal species and is frequent in the hills, Siwálíks and Bhábar. It is easily recognised by its head being much thicker than its neck or body. Th. 221.

Trimesurus monticola, Gray : colour in males blackish ash, in females and young pale brown. Two rows of square black spots along the back, alternately placed or confluent : sides black or brown spotted : a yellow or white streak from the eye to the neck with a Y-like mark on the neck : belly densely marbled brown : grows to 21 inches : rare, occurs in valleys. Th. 220.

Halys himalayanus, Günth.: colour dark brown, indistinctly spotted with darker spots transverse, edged with black : belly black, marbled with yellowish : a blackish band from the eye to the gape : grows to 25 inches : very common above 10,000 feet : found on Binsar. Th. 225.

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FISHES.

Fishes form the fourth division of the Vertebratæ. Like the mammals, birds and reptiles, they possess a vertebra, but they are cold-blooded and breathe by means of gills. The body may be divided into the head, trunk and tail and is provided with fins which according to their position are called pectoral, ventral, anal, caudal, adipose, and dorsal fins. For the fishes of India we fortunately possess Day's great work which will enable the local student at once to distinguish his captures. The following list is extracted from Dr. Day's articles¹ on the "Geographical distribution of Indian fresh-water fishes" and gives a reference to the description of each species in his 'Fishes of India.' There are sixteen families comprising eighty-seven genera of fresh-water fishes found in India and Burma. Of these two only are common to Africa and India only (not being Malayan) both being likewise Palæartic: 32 extend to the islands of the Malayan archipelago and 12 are common to the Indian, African and Malayan regions, of which six are likewise Palæartic. Further, if the 369 species comprised in the Indian genera be taken, two only are African and not Malayan, but they are also Palæartic: 27 are common to India and the Malayan archipelago and two to India, Africa and the Malayan region. In the Himálaya there are two great classes, the Tartarian fauna from the Palæartic regions and the Hindustan forms and amongst the latter, the hill Barbels have a well-marked distinct position. Altogether the Himálayan region contains recorded representatives of some eighteen genera, but much still remains to be done by local workers in accurately recording the distribution of species. Every one knows the bewildering mass of vernacular names for fishes that obtain in every district, but a careful study of Day will enable the naturalist with a fresh specimen

¹ Journ. Linn. Soc., XIII., 126, 336: XIV., 534, 1878-79: from which the facts as to distribution are taken: see also "Fishes of Yárkaand," Progr. Zol. Soc., 1876, p. 781.

before him to determine the names of the following amongst others that are said to occur in the Kumaun Division :—*selo, baldyan, kalonji, gulyál, gadhúla, náí, bain, gadera, bakulo, kanaluwa, kotuwa, jyábu, pharkato, mingaro, unero, bhagtera, sanero, damaruwa, aro, balsulo, dudhilo, gauro, bhegi, saulya, kano, gálar, káli-karnál, kar-gato, paparuwa, chhlaluwa* and the dry-fish known as *ashiála*.

Some of these fishes are found in shallow pools near the sources of the great rivers and such are provided with a transverse inferior mouth and a sucker behind the lower jaw with which they attach themselves to the rocks in order to resist the force of the current. The cold in winter in these elevated regions is intense and in the southern tract abutting on the plains the waters are ever warm. In the Taráí, the Bhuksas and the Thárus catch fish chiefly for their own consumption and in the hills the Doms are the principal fishermen. All classes in the hills except a few Brahmans and Baniyas eat fish at all times. No sustained and systematic efforts have ever been made to protect fish from poachers and the wanton destruction of fry and mature fish goes on almost unchecked. In the tract along the foot of the hills between the Sárda and the Ganges, nets with meshes $\frac{1}{4}$ – $\frac{3}{4}$ " are used and the great fishing season takes place in the cold weather. In the hills spearing fish by torch-light is sometimes resorted to and in Garhwál they are often snared in nooses made of white horse-hair which are attached to a line stretched across a river and near each group of nooses, a brightly-coloured flower or piece of cloth is fastened. The line is kept in its position by a leaden weight and the curious fish attracted by the novel object presented to them come swimming around it and are easily entangled in the nooses.

The Superintendent of Dehra Dún reports on the state of fish-conservancy in his district in the following terms and there is reason to believe that what was written in 1871 is true of 1881 :—

“ Breeding fish are destroyed in great numbers and the small fry are also largely captured. The former are taken in the commencement of the rains in every conceivable manner. At that time, they run up small streams and are then killed with sticks, are caught in nets, in baskets, by hooks fastened on lines and in many other ways. Small fry are taken at the end of the rains in baskets placed in fields at the outlets for irrigation-water and in the cold-weather

they are captured wholesale in small-meshed nets. From the month of March up to the beginning of the rains, streams are dammed and turned. In the districts along the foot of the hills the mountain torrents, when they burst from the hills, have three or four different beds, all of which are full during the rains, but afterwards only one. One year the stream is in one of these beds and another year in another. The poachers choose a spot where the stream and an old bed are in close proximity and both have good pools in them. They then fix nets right across the stream about a mile, or more, below this spot : first, nets with large meshes, and then nets with smaller meshes which are kept in position by heavy stones placed on their lower edge and floats above. When the nets are all ready the operators dam up the stream, and open a water-way into the old bed, so that the force of the water soon cuts a deep way for itself, and then the late bed of the stream is left dry, except in the deep holes. All fish that try to escape down are stopped by the nets. The poachers then take away all the fish they want, and leave the rest to perish gradually as the pools dry up. Small fry may sometimes be seen lying dead, six and eight inches deep, in these holes. The poachers, in a day or two, go through the same process somewhere else lower down, and after a month or so when the fish have become accustomed to the new bed, they commence at the top again, and return the stream into its late bed, catching all the fish in the new bed.¹ This is one of the most deadly modes of poaching, but, in addition to this process during the same period, the poachers are in the habit of using nets of very small meshes, with which they catch the young fry of the larger kinds of fish where damming the stream is impracticable."

Some improvement has of late been effected in Dehra Dún with the co-operation of the landholders by limiting the size of the mesh in common use to one and a half inch between knot and knot ; by prohibiting the sale of young fry in the markets and by establishing a close season during the first two months of the rains, but it is found that something more than private influence is required to check the wasteful use of this great food resource. In the hills some action should be taken to protect the *maháser*. This fish so good for food and sport commences to run up the smaller streams

¹ See further Day's official report on Indian fisheries.

about the end of March or beginning of April, and in June-July large specimens weighing ten to fifteen pounds may be seen in little streams not more than a few yards wide. These are all heavy with spawn and fall easy victims to the poacher. Where the streams narrow and run between rocks, the Doms fasten a series of strings with sharp strong barbed hooks every three inches to the rocks on each side and in this way secure a vast number of the larger fish. In the hills also the poisoning of pools with various vegetable drugs is a common practice and could easily be discouraged. The portions of plants more commonly used for this purpose are the bark of *Zanthoxylon hostile*, Wall., the *tímúr* and *tejbal* of Kumaon, common throughout the hills: the fruit of *Casearia tomentosa*, Roxb., the *chíla* of the Siwálik tract and *Anagallis arvensis*, Linn., the *jonkhmára* and *jaighani* of Kumaon, of which the whole plant triturated is used to poison fish or to expel leeches from the nostrils hence its vernacular name. It is plausibly stated that fish are not such a common article of food as to need conservation, but it is precisely for this reason that they should be protected. Fish are universally eaten by the casteless classes that form the majority of the population and who are also the first to suffer in times of scarcity. It is not so necessary to protect the food-resources of the rich and powerful as to conserve those which might be made available for the poor labouring man and his family when famine is abroad. I would, therefore, strongly urge the prohibition of poaching and the introduction of a close season for the carp tribe: in fact the introduction of Ross' Dún rules by legislative enactment.

PISCES.

ORDER PHYSOSTOMI.

Family—SILURIDÆ.

Silurus Afghana, Günth. Day, 481. Procured from Afghánistán, Kashmír, Darjiling.

Amblyceps Mangois, Buch. Day, 490. Procured from Kangra and Darjiling and found in the upper Jumna.

Bagarus Yarrellii, Buch. Day, 495. The *gínch* found near Hardwár and called the fresh-water shark. It attains a length of six feet or more.

Glyptosternum Lonab, Sykes. Day, 496. Procured in the head-waters of the Jumna.

Glyptosternum trilineatum, Blyth. Day, 497. Procured from Nepál.

Glyptosternum conirostre, Stein. Day, 497. Himálayan streams.

Glyptosternum Botia, Buch. Day, 497. A mountain stream species found in the upper Jumna.

Glyptosternum pectinopterum Day, 499. Found in the Himálaya from Kangra to Darjiling.

Euglyptosternum lineatum Day, 500. Found in the upper Jumna.

Family.—CYPRINIDÆ. Carps.

Homaloptera maculata, Gray. Day, 525. Found in the Himálaya, also in the Wynád and Bhawáni rivers, Madras.

Discognathus Lamta, Buch. Day, 527. *Pathar-chata*, common in the great rivers having their origin in the hills; taken in Chamba in the Himálaya.

Oreinus sinuatus, Heckel. Day, 529. Occurs in the rivers within the hills and attaches itself by a suoker to the rocks and boulders and thus resists the action of the current. The species of this genus with *Schizopygopsis*, *Schisothorax*, *Ptycobarbus*, and *Dip-tychus* are strictly residents of the hilly regions of the Himálaya, though a few descend to the plains. The genus *Oreinus* extends from Afghánistán along the Himálaya to the frontiers of China. They also descend a short distance into the rivers of the plains and are absent from the level plateaus on the summit of the Himálaya.

Oreinus Richardsonii, Gray. Day, 530. This is the so-called mountain-trout of Kumaon, of which a figure is given by McClelland in J. A. S., Ben., IV., 39.

Oreinus plagiostomus, Heckel. Day, 530. This species occurs throughout the Himálaya from Afghánistán to Bhután.

Schizopygopsis Stoliczka, Steind. Day, 531. Found in the cold waters of the Himálaya about the source of the Indus, Tibet;

where the rivers are snow-fed and many of them never reach the sea.

Schizothorax progastus, McClell. Day, 532. The *dindwa* of these Provinces : occurs from the head-waters of the Ganges eastwards.

Schizothorax esocinus, Heckel. Day, 533. Procured in Kashmír and Ladák.

Ptycobarbus controstris, Steind. Day, 533. Procured in the head-waters of the Indus and Tibet.

Diptychus maculatus, Steind. Day, 534. Procured in the head-waters of the Indus and Yárkand rivers, Tibet and Nepál.

Labeo diplostomus, Heckel. Day, 540. The *muheli* of Hardwár occurs in the Himálayan rivers from the Panjáb to Asám, including the rivers at their bases.

Labeo dyocheilus, M'Clell. Day, 540. The *buodla* of these Provinces : occurs in the same localities as the preceding.

Labeo Pangusia, Buch. Day, 541. Occurs throughout the Himálayan range and descends to the delta of the Ganges.

Labeo microphthalmus, Day, 542. Occurs in the Himálaya.

Labeo sindensis, Day, 544. Occurs at Hardwár.

Cirrhitina Latia, Buch. Day, 548. Occurs along the Himálaya in the hill rivers.

Barbus chilinoides, M'Clell. Day, 563. Occurs throughout the Himálaya as far east as Asám and descends into the Ganges.

Barbus Tor, Buch. Day, 564. Occurs throughout the hill rivers : the *moháser* of fishermen.

Barbus hexastichus, M'Clell. Day, 565. Occurs commonly in all rivers on and around the Himálaya.

Apidoparia Jays, Buch. Day, 585. The *pahruwa* of Hardwár : occurs also at Rájpur on the Jumna.

Barilius Vagra, Buch. Day, 589. Common in the rivers of the Himálayan and sub-Himálayan ranges. The fishes of the genus *Barilius* prefer rapid streams and frequently ascend the rivers of the hills.

Barilius Schacra, Buch. Day, 590. Procured from Hardwár.

Barilius Bendelisis, Buch. Day, 590. Found in the Himálayan rivers and also in the plains (except Sind and the Malabar coast) and Ceylon.

Danio æquipinnatus, M'Clell. Day, 596. Hitherto received only from the Himálayan rivers eastward of Nepál.

Danio Dangila, Buch. Day, 596. Procured in the hills near Darjiling and in the Gangetic delta.

Botia nebulosa, Blyth. Day, 606. Hitherto only from Darjiling.

Botia Dario Buch. Day, 606. Procured at Hardwár.

Botia Geto, Buch. Day, 606. Found from Sind through the Panjáb and Himálaya to Asám.

Botia almorhæ, Gray. Day, 607. Found in the Suál river below Almora, also in Kashmír.

Leptocephalichthys Guntea, Buch. Day, 609. From the Panjáb to Asám, including several of the Himálayan rivers.

Nemacheilus rupicola, M'Clell. Day, 616. Occurs in the rivers of the upper Himálaya and (?) Tibet at 16,000 feet above the level of the sea.

Nemacheilus montanus, M'Clell. Day, 616. Occurs throughout the Himálaya.

Nemacheilus sonatus, M'Clell. Day, 618. Occurs in the Jumna, Ganges and their affluents : taken in Dehra Dún.

Nemacheilus ladacensis, Günth. Day, 618. Tibet.

Nemacheilus spilopterus, Cuv. Day, 620. Recorded from the Himálaya.

Nemacheilus marmoratus, Heckel. Day, 620. Recorded from the Kashmír lake.

Nemacheilus Stolickæ, Steind. Day, 620. Taken in the Indus near Leh and in the Yárkand river.

Nemacheilus gracilis, Day. Day, 621. Taken in the headwaters of the Indus.

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CHAPTER II. ZOOLOGY (*Invertebrata*).

CONTENTS.

Land and fresh-water shells. Arachnida. Insecta. Coleoptera. Orthoptera. Hemiptera. Neuroptera. Lepidoptera. Hymenoptera. Diptera. Myriapoda.

MOLLUSCA.

The section of this order found in the Himalaya is confined to land and fresh-water shells. No special work on the hill species has yet been written, but they are incidentally noticed in the catalogues quoted amongst the references at foot. The animals of this class possess a head furnished with organs of touch and vision and sometimes of hearing. Some live on land, but most live in water and little has yet been done to describe the animals themselves apart from their shells. My thanks are due to Mr. W. Theobald for placing his lists at my disposal. I have again to repeat that these lists are neither exhaustive nor up to the present state of science, but are merely suggestive notes which will aid those who desire thoroughly to investigate the local fauna.

Class GASTEROPODA.

Family *Melaniida*.

Melania, Lam.—*scabra*, Mall. C. I. t. 73 ; f. 1-7 : *tuberculata*, Mall. C. I. t. 74 ; f. 1-4.

Family *Ampullarida*.

Ampullaria, Lam.—*globosa*, Swain. ; C. I., t. 113 ; f. 3-5. ?

Family *Viviparida*.

Vivipara, Lam.—*bengalensis*, Lam. ; C. I. t. 76. f. 8-10 : *dissimilis*, Mall. ; C. I., t. 100 ; f. 3, 4.

- Family *Rissoida*.

Bithynia, Lam.—*cerameopoma*, Benson ; C. I. t. 88. f. 1, 4. ? : *pulchella*, Benson ; C. I. t. 88 ; f. 5, 6.

Tricula, Benson.—*montana*, Benson ; An. Mag. N. H. 1862, p. 415.

Family *Zonitida*

Macrochlamys, *Benson*.—*chloroplax*, *Benson*; C. I. t. 32; f. 1, 4, *glauca*, *Benson*; C. I. t. 63; f. 10: *indica*, *Benson*; C. I. t. 87; . 7, 10: *splendens*, *Hutton*; C. I. t. 51; f. 7, 10: *nuda*, *Pf.* C. I. t. 31; f. 7, 10: *vesicula*, *Benson*; C. I. t. 63; f. 4-6: *ornatissima*, *Benson*; C. I. t. 60; f. 4: *planiuscula*, *Benson*; C. I. t. 32; f. 7, 10: *prona* *Nov. Moll. Yark. Mis.*

Sitala, *Adams*.—*Bullula*, *Hutton*; C. I. t. 61; f. 2, 3: *Nana*, *Hutton*; C. I. t. 61; f. 7-9: *radicicola*, *Benson*; C. I. t. 62; f. 10.

Kaliella, *W. Blanf.*—*barakporensis*, *Pf.*; C. I. t. 87; f. 7: *fastigiata*, *Hutton*; C. I. t. 16; f. 5.

Hemiplecta, *Albers*.—*monticola*, *Hutton*; C. I. t. 52; f. 3.

Ariophanta, *Desmo.*—*cyclotrema*, *Benson*; C. I. t., 28; f. 10.

Helicarion, *Ferussac*.—*monticola*, *Benson*; *Pf. Mon. II.*, 497: *scutella*, *Benson*; C. I. t. 66; f. 1, 4: *cassida*, *Hutton*; *J. A. S. Bene.*, VII., 214; *Flemingii*, *Pf.*; C. I. t. 66; f. 5, 6: *ovatus*, *H. Blanf.*; *J. A. S. Ben.* 1871, ii., 44.

Family *Helicida*: Snails.

Fruticola, *Hildreth*.—*Huttoni*, *Pf.*

Vallonia, *Risso*.—*humilis*, *Hutton*; C. I. t. 61; f. 4-6.

Peronæus, *Albers*.—*cænopictus*, *Hutton*.

Napæus, *Albers*.—*arcuatus*, *Hutton*; C. I. t., 20; f. 2, 7: *Boysianus*, *Benson*; C. I. t. 22; f. 6: *ceratinus*, *Benson*; C. I. t. 80; f. 2: *cælebs*, *Benson*; C. I. t. 80; f. 1: *fallaciosus*, *Stol.*; *kunawarensis*, *Hutton*; C. I. t. 19; f. 3: *pretiosus*, *Cantor*; C. I. t. 23; f. 7: *rufistrigatus*, *Benson*; C. I. t. 20; f. 4; t. 23, f. 10: *segregatus*, *Benson*; C. I. t. 80; f. 10: *Smithii*, *Benson*; C. I. t. 20; f. 6: *vibex*, *Hutton*; C. I. t. 20; f., 5: t. 23, f. 2.

Opeas, *Albers*.—*gracilis*, *Hutton*; *Pf.* ii., 157: *latebricola*, *Benson*; C. I. t. 79, f. 7.

Glessula, *Albers*.—*balanus*, *Benson*; *Gl. in Sc. I. t. 8*, f. 12: *iota*, *Benson*; *leptospira*, *Benson*; C. I. t. 35, f. 2?

Cylindrus, *Fits.*—*insularis*, *Ek*; C. I. t. 22, f. 10.

Pupa, *Drapar.*—*eurina*, *Benson*; C. I. t. 101, f. 10: *orcula*, *Benson*; C. I. t. 87; f. 1, 4: *plicidens*, *Benson*; C. I. t. 100; f. 8: *tutula*, *Benson*; *Conch. Icon*, 625, t. 84.

Succinea, *Draper*.—*Bensoni*, *Pf.*; *C. I. t.*, 67; *f.* 9: *indica*, *Pf.*, *C. I. t.* 67, *f.* 1, 4.

Clausilia, *Draper*.—*cylindrica*, *Gray*; *C. I. t.* 24, *f.* 4.

Ennea, *Adams*.—*bicolor*, *Hutton*; *C. I. t.* 100, *f.* 6.

Order LIMNOPHILA.

Family *Auriculidae*.

Carychium, *Müll.*—*indicum*, *Benson*; *An. Mag. N. H.*, 1849, p. 194: *Boysianum*, *Benson*, *Ibid.*, 1864, p. 210.

Coilostele, *Benson*—*scalaris*, *Benson*; *An. Mag. N. H.*, 1864, p. 136.

Family *Limnæidæ*—Pond-shells.

Limnæa, *Lam.*; *acuminata*, *Lam.*; *C. I. t.* 69; *f.* 8, 9: *luteola*, *Lam.*; *C. I. t.* 70, *f.* 5, 6.

Planorbis, *Guett.*—*cænosus*, *Ben.*; *C. I. t.* 39, *f.* 7-9: *calathrus*, *Ben.*; *C. I. t.* 39, *f.* 1-3: *compressus*, *Ben.*; *C. I. t.* 99, *f.* 1, 4: *convexiusculus*, *Hutton*; *C. I. t.* 99, *f.* 8-10: *exustus*, *Desh.*; *C. I. t.* 39, *f.* 10; *t.* 40, *f.* 10: *labiatus*, *Ben.*; *J. A. S. Ben.*, 1850, p. 350: *rotula*, *Ben.*; *C. I. t.* 99, *f.* 2, 3.

Ancylus, *Geoff.*—*verruca*, *Ben.*; *C. I. t.* 81, *f.* 2, 3.

Order ECTOPHTHALMA.

Family *Cyclophoridaæ*.

Cyclophorus, *Montfort*—*exul*, *Benson*; *C. I. t.* 47; *f.* 7.

Alcyæus, *Gray*—*strangulatus*, *Hutton*; *C. I. t.* 93; *f.* 2, 3.

Family *Diplommatinidæ*.

Diplommatina, *Benson*—*costata*, *Hutton*; *An. Mag. N. H.* 1849, p. 194: *folliculus*, *Pf.*; *Ibid.*, p. 193: *Huttoni*, *Pf.*; *Progs. Z. S.*, 1852, p. 157.

CLASS PELECYPODA.

Order Veneracea.

Family *Cyrenidæ*.

Corbicula, *Megerle*—*occidens*, *Benson*; *C. I. t.* 188; *f.* 8, 9.

Pisidium, *Pfeiffer*—*Nevellianum*, *Theob.*; *Progs. As. Soc. Ben.*, 1875.

Order *Lucinacea*.Family *Unionidæ*.

Unio, *Philippson*—*marginalis*, *Lam.* ; C. I. t. 43, f. 2 ; t. 44, f. 3 : *corrugatus*, *Mall.* ; C. I. t. 45, f. 2-5 : *cæruleus*, *Lea* ; C. I. t., 12 ; f. 3.

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ARACHNIDA—Mites, Scorpions, Spiders.

The Arachnida form a class of the great sub-kingdom *Articulata*, which also includes the *Annelidæ*, *Crustacea*, *Myriapoda* and *Insecta*. They have no proper metamorphosis, though during the several moultings that some pass through, structural changes take place, which approach in character the incomplete metamorphosis of certain orders of insects. In the Arachnida, the head and the thorax are soldered together in one piece known as the cephalo-thorax, and to the lower surface of this, as a rule, the legs are attached. The head is furnished with a pair of jaws called *maxillæ* and the mandibles of insects are represented by *fulcra*, organs intended for seizing and compressing the insects or other substances on which the arachnids prey. There is also a part of variable form representing the *labium* in insects and in many a *ligula* or tongue. In some, these different portions are soldered together to form a sucking apparatus. Nearly every species possesses simple eyes varying in number from two to twelve and of first importance amongst the spiders in the most received system of classification. The abdomen is joined to the thorax by its entire breadth or by a pedicel and is either unsegmented or segmented. It is sometimes, as in the scorpions, prolonged into a segmented tail or in others into a button or a more or less hair-like appendage or is furnished with spinners and spinnerets. Arachnids are either

oviparous or ovo-viviparous. They are distributed into the following orders :—

- I.—*Acaridea*, mites.
- II.—*Pycnogonidea*, marine parasites.
- III.—*Phalangidea*, Harvest-mon : includes the family Phalangides.
- IV.—*Solpugidea* : contains the family Galeodides.
- V.—*Scorpionidea*, scorpions : contains the families Pseudoscorpiones, Androctonoides, Pandinoides.
- VI.—*Thelyphonidea* : contains the families Thelyphonides and Phrynides.
- VII.—*Araneidea*, spiders : contains some thirty-two families and some 260 genera.

The *Acaridea* comprise mites of all kinds and are common under the bark of trees, in the ground, in water and on decomposing animal and vegetable matter. They include the Indian itch insect (*Sarcoptes indica*) and the mites of cheese and sugar and are frequently found as parasites. The *Pycnogonidea* are marine parasites, of which an Indian species (*P. Kroyeri*) has lately been described¹ by Mr. Wood-Mason. The *Phalangidea* live on the young of other spiders, certain *Acaridea* and small insects. The *Solpugidea* comprise certain spider-like animals which differ from the true spiders in several structural details. To this order belongs the *Galeodes fatalis*, Herbst (= *vorax*, Hutton), of which the late Captain Hutton has left us an interesting account. He tells us that it was his custom during the rainy season to spread a sheet on the ground any fine evening and placing a lamp near it, to collect the numerous insects that assembled. One evening two or three of these spiders made their appearance and no sooner did a moth or beetle alight than they snapped it up and devoured it. He secured one and placed it in a vessel, the bottom of which was well supplied with earth which had been hardened by pouring water on it and then allowing it to dry. The *Galeodes* soon began to dig a hole and in a very short time succeeded in making itself a subterranean retreat in which it usually resided, seldom coming out beyond the mouth of its den. It proceeded to dig out the earth at first with its strong jaws, cutting it away in a circle, and having thus loosened the soil,

¹ J. A. S. Den., XLII., II., 171.

it gathered it together into a heap with its anterior palpi and threw it out behind as a dog does in scratching a hole. When it had by this means succeeded in excavating a hole sufficiently large first to enter, instead of throwing out the loose earth as at first, it gathered a quantity together and surrounding or embracing it with the anterior palpi, shoved the load by main force before it up to the mouth of the cave and then returned for more. Having completed its task, it remained for a few days stationary and then refused to feed. It proved to be a female and deposited its ova, which appeared to be of about the size of a somewhat large mustard-seed and of a whitish hue. These hatched in about a fortnight and the young in about three weeks cast their first skin, when the jaws and palpi became a deep brown. They now commenced to move about, but at the first sight of danger invariably fled for refuge to their mother, who was able to distinguish between them and insects given to her as food. She was always ready for food, consuming at a single effort a lizard three inches long exclusive of the tail and being able to destroy a young bird and the young of a musk rat introduced to her den: but these she did not eat. One has been known to kill and eat a good sized scorpion. The usual size of an adult specimen is 2.5"—2.9" long and the body or abdomen is about the size of a thrush's egg. When in motion the body is elevated from the ground and the two pairs of palpi or feelers are erected, ready for a seizure. The head is armed with two toothed *chela* or double jaws, somewhat like the fore-arms of a scorpion, one pair of which are advanced to hold the prey whilst the other cut it. The jaws thus alternately advance and cut until the victim is sawn in two.

The Scorpionidea or scorpions are too well known to require description. They vary in size from the little book scorpion (*Chelifer*) hardly quarter of an inch in length to the great black scorpion measuring six inches. In parts of the country there are persons who profess to be able to take any scorpion in their hands with impunity and at several Musalmán shrines in the North-Western Provinces scorpions are esteemed sacred. The family *Thelyphoridae* of the order *Thelyphonidea* comprises a remarkable homogeneous group of which India possesses a fair number of examples. Last of all come the *Araneidea* or true spiders, varying in size from

¹ J. A. S. Ben, XI., 857; Am. Mag. N. H., N. S., XII., 81.

almost microscopic animals to the great *Mygale* which is said to prey (?) upon birds. There is no doubt but that in the Arachnidæ we have a class of animals regarding which the Indian naturalist can afford considerable aid to science, for there is practically nothing known regarding its species in Upper India. The geographical range of some spiders is very great; *Artema convexa* is found in Pernambuco in South America, in equatorial Africa and in Meerut, and *Gasteracantha frontata* is found in Africa and India. Hence, as observed by Stoliczka, we may reasonably expect to find in Western India a great number of species identical with those of Arabia and Egypt; in southern India many referable to Ceylon species and nearly allied to those of the Mauritius and in the Burmese region others identical with or akin to the spiders of the Indian archipelago. To the west an admixture of African types and to the east a mingling of Malayan types will be found to prevail as in the *Vertebrata*. He adds:—"It is really remarkable that in examining a collection of spiders from our Eastern frontier, together with another made in Western India, often scarcely a single species will be found to be identical to both parts. Bengal has a strong admixture of Malayan types and several species are common to it, Burma and Asám. The Western Himálaya possess in the Arachnoid fauna a prominently European character, as their general climate would lead us to expect, and the Eastern Himálaya probably contains some Chinese or Malayan types. It is strange that not only dislike but a real enmity and ill-feeling against Arachnids appears to have taken hold of men's minds. No doubt the few species which secrete a poisonous fluid in special glands and through its use occasionally become dangerous are the source of much of this ill-feeling in India. They are, on the whole, certainly harmless and as regards usefulness are scarcely surpassed by any other class of animals. They live wholly on insects and destroy a very large number of those which often do much damage to both animal and vegetable life. Their instinct also is very highly developed and shows itself not only in the way in which they obtain their living but in their exposition of the art of weaving. Their whole life is passed in carrying out arrangements for their support that presuppose a considerable amount of thought and deliberation." Spiders should be preserved in spirits of wine. The colours are, however, so fleeting that the collector should at the

time of capture note the colour as well as the habits of the species, whether terrestrial or aquatic; whether it secures its prey by running after it, jumping on it or by lying in wait for it in natural or artificial cells; whether it has a fixed home, and if so, whether the reticulations of the web are close or in open geometrical order. All these matters are aids for the correct identification of species.

ARACHNIDA.

III.—PHALANGIDEA.

Family *Phalangides*.

Gagrella, *Stol.*—*atrata* (Cal.), *signata* (As.), *Stol.* : (*Aoanthonotus*)
niger *Koch* : (*Phalangium*) *monocanthum*, *Herbst*.

IV.—SOLPUGIDEA.

Family *Galeodides*.

Galeodes, *Oliv.*—*fatalis* (= *vorax*, *Hutton*) (N. I.) *Herbst* : *brevipes*
(Mad.) *Gerv.* : *orientalis* (W. Ben.), *Stol.*

V.—SCORPIONIDEA.

Family *Pseudo-scorpiones*.

Chelifer, *Leach.*—*cancroides* (N. I.), *Linn.*

Family *Androctonoides*.

Buthus, *Leach.*—*afer* (N. I.), *megacephalus*, *Cæsar*, *Koch* : *spinifer*,
Ehr.

Family *Pandinoides*.

Scorpiops, *Pet.*—*Hardwickei* (N. I.), *Gerv.* : *slaber*, *Hemp.*

VI.—THELYPHONIDEA.

Family *Thelyphonides*.

Thelyphonus, *Latr.*—*angustus* [= *proscorpio*, *Latr.*], (Ben.), *Lucas* : *indicus*, *scabrinus*, *assamensis* [= *rufimanus*, *Lucas* ?], *Beddomei* (W. Ben.), *Stol.* : *caudatus* (Ben. Mad.), *Linn.*

Family *Phrynides*.

Phrynus, *Oliv.*—*Whitei* (Ben.), *Gerv.* : *marginemaculatus*, *nigri-*
manus, *Koch.*

VII.—ARANEIDÆ.

Family *Lycosides*.

Lycosa, Latr.—*indagatrix* (Mad.) *Walck.*: *Greenallie* (N. I.), *Black*.

Dolomedes, Latr.—*longimanus* (Cal.), *Stol*.

Family *Sphasides*.

Sphasus, *Walck.*—*indicus*, *Walck.*: *lepidus*, *Black.*: *viridanus* (Cal.), *similaris* (Cal.), *Stol*.

Hersilia, Sav.—*calcuttensis*, *Stol.*: *indica*, *Lucas*.

Family *Salticides*.

Salticus, Latr.—*biguttatus* (N. I.), *candidus* (N. I.), *Black*.

Family *Thomisiides*.

Thomisus, *Walck.*—*tuberosus*, *Black.*: *pugilis* (Cal.), *elongatus* (Cal.), *Peelianus* (As.), *Stol*.

Sparassus, *Walck.*—*striatus* (N.-W. P.) *Black*.

Family *Drassides*.

Gnaphosa, Latr.—*Harpax* (Bom.), *Camb*.

Drassus, *Walck.*—*delicatus* (N.-W. P.), *Black.*: *macilentus*, *astrologus*, *luridus*, *ferrugineus* (Bom.), *Camb*.

Cheiracanthium, *Koch.*—*inornatum*, *insigne*, *vorax*, *indicum*, (Bom.), *Cambridge*.

Clubiona, Latr.—*flicata*, *drassodes* (Bom.), *Camb*.

Family *Agelenides*.

Tegenaria, *Walck.*—*civilis*, *Walck*.

Family *Dictynides*.

Eresus, *Walck.*—*tibialis* (Mad.), *Camb*.

Family *Scytodides*.

Scytodes, Latr.—*propinquus* (Cal.), *Stol*.

Family *Pholcides*.

Pholcus, *Walck.*—*Lyoni* (N.-W. P.), *Black*.

Family *Theridides*.

Artema, *Walck.*—*convexa* (N.-W. P.), *Black*.

Argyrodes, *Sim.*—*fassifrons*, *procrastinaus* (Bom.), *Camb*.

Family *Epeirides*.

Epeira, *Walck.*—*chrysogaster*, *malabariensis*, *Walck.*: *stellata*, (Cal.), *mammillaris* (As.), *braminica* (Cal.), *hirsutula* (Cal.), *Stol.*

Tetragnatha, *Walck.*—*bengalensis*, *Walck.*: *irridescens* (Cal.), *Stol.*: *decorata*, *Black*: *culta*, *argentata*, *Camb.*

Nephila, *Leach.*—*argustata* (Cal. As.), *cicatrosa* (Cal.), *Stol.*: *ornata*, *Black*.

Meta, *Keyser.*—*gracilis* (Cal.), *Stol.*

Family *Gasteracanthides*.

Gasteracantha, *Latr.*—*arcuata*, *Walck.*: *Helva*, *frontalis*, *Black*: *canningensis* (Cal.), *Stol.*

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INSECTA—Insects.

There is no class of animals on which more has been written than insects and none of which the Indian species are so little known to the general public. Whether we regard the position of insects in nature from a purely scientific point of view or their uses in the arts and the influence exercised by them over the products of nature most valuable to man from an economic stand-point, the importance of a correct knowledge of their life-history and habits is equally established.

Insecta.

The study of the local insect fauna of the Himálayan districts of the North-Western Provinces is in itself especially to be desired; for the Káli river is not only a political barrier, but also a great natural boundary separating the species proper to the eastern Himálaya and related to the great Malayan fauna from those that belong to the western range with their Palearctic and African affinities. Moreover, between the swamps of the Tarái on the south and the snowy range there are examples of diverse forms of climate, each with its corresponding flora and fauna. In places, the naturalist may ascend direct from a river bed bearing vegetation common to it and the tropics to the region of perpetual snow with its northern flora. Hence we find along the foot of the hills and far up the deeper valleys an abundance of forms of insect life typical of more tropical climes and well beyond their natural limits. They betray their southern origin in their dwarfed size and soon give place to other types fulfilling the same functions under a different and more suitable form. In addition to this mingling of northern and southern forms there is also an affinity in many genera with the corresponding genera found in Europe and northern Asia and there are several species even identical with those found in Europe, so that we have within a comparatively small field, examples of the fauna of the principal nature-divisions of the old world and a rare opportunity for contributing to the knowledge of the geographical distribution of animals.

It is not, however, to the purely scientific value of a study of the insect fauna of the Kumaon hills that I would call attention, but to the practical uses to which knowledge thus gained may be applied in the every day affairs of life. Apart from the pleasure and profit derived from a properly directed examination of insect phenomena, all really useful work in the same field must possess a systematic basis if for no other reason than that thus alone the observer can communicate the results of his labour to others. The apparently hard names used by entomologists to distinguish species are merely so many tickets to show the place of the insect named in the general scheme of creation and with the place, its affinities and often its habits. It would be impossible to give here a description of every insect, but I have, in the following pages, briefly described the several orders and recorded the principal families and genera belonging to them found

in India. The materials at my disposal have not allowed me, except in the case of the diurnal Lepidoptera, to separate those found in Kumaon from those only found in other parts of India; but the lists, which are practically the first of their kind for most orders, will aid the student materially by showing what may be looked for. To the forester especially the study of entomology is a necessity, to enable him to prevent the destruction not only of the living trees and young plants in his nurseries but of the timber stored in his depôts. The tea-planter will successfully combat the attacks of the beetle larva that eats the roots of his plants and the 'red spider' that lives on its leaves if he studies their habits. The weevils of wheat, grain, peas, rice, maize and the blight insects that attack the same crops have hitherto had no attention bestowed on them, nor have the insects injurious to domestic animals and human beings been studied with the care to which they are entitled. The economy of the lac insect is not generally known and the life-history of the various species of honey-bee has been but imperfectly investigated. He who shall discover means whereby the injuries caused by white-ants can be prevented and the discomforts due to the attacks of mosquitos and cattle-flies can be mitigated will have deserved well of his country and indeed of the whole human race.

Both the Greek (*entoma*) and Latin (*insecta*) name for the class denote notched animals. Insects have, as a rule, wings and breathe by means of air-tubes which ramify throughout the internal organs. The body is made up of three parts, the head, thorax and abdomen. On the head the oral or buccal apparatus, eyes and antennæ may be distinguished. The oral apparatus consists of six parts, of which four are in pairs and move transversely, whilst two, the upper lip (*labrum*) and the under lip (*labium*), move up and down. Of those which move transversely one pair forms the upper jaws or mandibles and the other lower jaws or maxillæ, to the latter of which as well as to the under lip, palpi or feelers are attached. The eyes are either simple or compound. The simple eyes are called ocelli and may be seen behind the larger eyes in bees and wasps, and the compound eyes are large enough, as in the case of dragon-flies, to appear to meet and are composed of six-sided facets often numbering many thousands in a single insect. The antennæ are moveable, jointed

threads attached to the head usually close to the eyes. In masticating insects, like beetles and locusts, the organs of the head are as described, but in sucking insects like butterflies and bugs there are several modifications. The lower jaws in butterflies are converted into a trunk or tongue and the jaws in bugs appear in the form of a rostrum or beak. The thorax in all insects consists of three pieces, the prothorax, mesothorax and metathorax. In four-winged insects one pair of wings are attached to the middle segment and one to the posterior segment, and in two-winged insects the wings are attached to the mesothorax. The majority of insects have six legs, one pair being attached to the lower surface of each segment of the thorax. The legs are divided into the haunch (*coxa*), trochanter, thigh (*femur*), shank (*tibia*) and tarsi or feet, which last consists of several joints varying in different families. As a rule, insects possess wings in the perfect state, but each of the orders contain some apterous forms like the female glowworm and the worker ants and all undergo a metamorphosis more or less complete. From the egg, the larva state is reached, from that the pupa state and then the imago or perfect insect appears. In the beetles, butterflies and flies, the larva differs more from the perfect insect than in the grasshoppers and bugs, but in all, the larva stage is marked by the entire absence of wings, the pupa stage by the possession of rudimentary wings and the imago stage by perfect wings. There is a marvellous adaptation of the larva to its surroundings, so that many are alike in form of which the perfect insects may belong not only to different families of the same order, but to different orders. The grubs of the flesh-eating Diptera, of the gall-insects belonging to the order Hymenoptera and of the weevils of the order Coleoptera are all of the same description, fat, fleshy, legless, accustomed to live amid their food. Similarly those larvæ which live on fresh vegetable juices and those which live on the inner sap of trees closely resemble other larvæ of similar habits whose ultimate form places them in different orders. The changes too from the larva to the pupa stage are not always abrupt and well-marked. In many cases they are numerous, each adapted to some change in the life-history of the insect and its surroundings and are so far apparently independent of the ultimate change to the imago state. These may be called adaptational changes and are accompanied by slight developmental

modifications which gradually bring the pupa state to that of the imago without such sudden alterations in form as are seen in some orders and without any marked cessation of activity. The life-history of any of the grasshoppers compared with that of a butterfly will illustrate this fact. Where great developmental changes take place in the pupa state there is a period of quiescence and a considerable shortening of the time within which the change is effected. The duration of life in one stage has much apparent connection with the length of time passed in others. Where the larva state continues for some years as in the case of many beetles, the perfect insect lives but a short time in comparison with others where the change occurs sooner. Some moths and flies live but a few hours, others many months and some species of ants for several years.

Enough has been said in the way of introduction, and I shall now proceed to give a list of the Indian species of each order. The names are taken from all the recognised authorities that I have been able to consult, but it is to be clearly understood that these lists are not to be considered exhaustive or to contain the latest arrangements and terminology of each order. They are the essence of notes made from time to time and are intended to serve as an indication of the families, genera and species that they may be looked for.¹ It is not yet time for any one to undertake a systematic survey of the hitherto known Indian insects, except perhaps the diurnal Lepidoptera, since they comprise a number of species which have been described by writers who have held very different systematic views and who have in many instances given very misleading or imperfect descriptions. The only course left open to those who desire to place the study of our magnificent insect fauna on a better footing is to endeavour to complete the lists of described species and elucidate their synonymy and then survey each order, family and genus in detail, and correct the errors that have been made. I need not say that this is a work which can only be done by many competent labourers working together and taking up section by section and is utterly beyond the power of one.

Insects are distributed amongst the following orders :—

Coleoptera—beetles. *Neuroptera*, dragon-flies, &c. *Diptera*,
flies.

The plan adopted for recording 'locality' will be found at page 3.

Orthoptera—locusts, &c. *Lepidoptera*, butterflies, moths. *Strepsiptera*, certain parasites.

Hemiptera—bugs, cicadas, &c. *Hymenoptera*, ants, bees. *Thysanura*, spring-tails.

References.

Westwood.—Introduction to the modern classification of Insects. London, 1839-40.

Wilson, J.—Article 'Entomology' in Enc. Brit., 8th edition.

Kirby and Spence.—Introduction to Entomology. London, 1822.

Burmeister.—Handbuch der Entomologie. Berlin, 1832.

Duncan.—Transformations of Insects. London (no date).

Percheron.—Bibliographie Entomologique. Paris, 1837.

Van der Hoëven.—Handbook of Zoology, edition Clark. London, 1856.

All the above are practical works, sadly out of date, but containing much that is invaluable. The following are picture books comprising notices of many Indian insects:—

Drury.—Illustrations of exotic Entomology, ed. Westwood. London, 1837.

Donovan.—Natural History of the Insects of India and China, ed. Westwood. London, 1842.

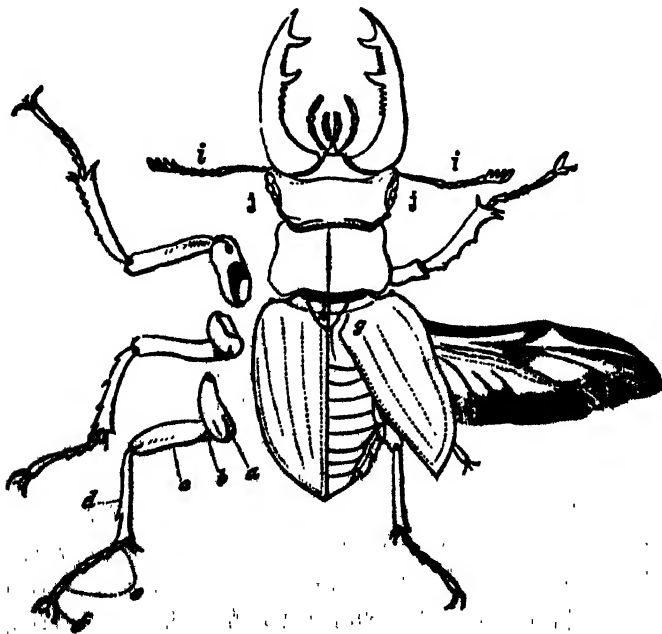
Westwood.—Cabinet of Oriental Entomology, London, 1848: Arcana Entomologica. London, 1845.

COLEOPTERA—Beetles.

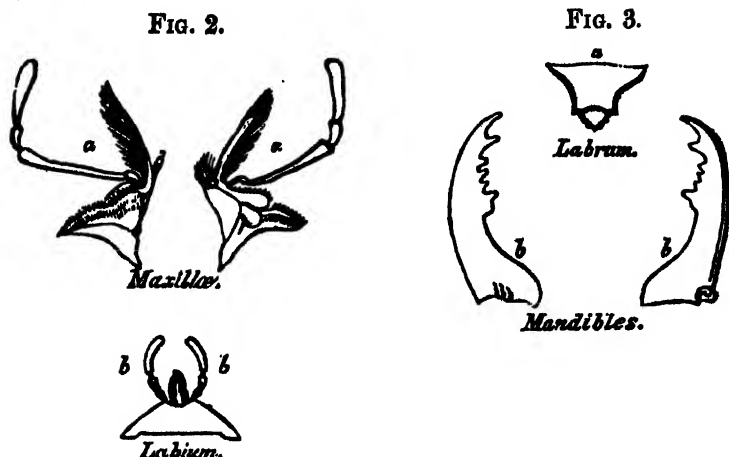
The order Coleoptera (sheath-winged) comprises those insects commonly known as beetles. They vary much in form, but all pass through a complete metamorphosis, the larva, pupa and imago stages. The perfect insect is composed of three parts, the head, trunk and abdomen. The head possesses a mouth formed for mastication and furnished with an upper lip (*labrum*), a lower lip (*labium*), a pair of mandibles and a pair of maxillæ. The labium is composed of two parts, the *mentum* or chin and the *ligula* or tongue, and is also furnished with a pair of *palpi* or feelers, appendages which are also attached to the maxillæ (*i* in figure). Where there are a pair of palpi on each maxilla, the exterior pair never consist of more than four joints, whilst those of the under lip have seldom more than three joints. The head is further furnished with antennæ and eyes (*j* in figure). The antennæ though varying in form and structure not only in different genera but often in the sexes of the same genus usually have ten or eleven articulations. They are inserted in the anterior portion of the head, a little in front of or below the eyes. The eyes are two in

number and compound and are either entire or divided into two by a horny septum. The thorax is divided into three parts, the prothorax, mesothorax and metathorax. The wings are four in number, of which the anterior pair (*elytra* : *g* in figure) are hard and leathery and not used for flight. The posterior pair of wings are membranous and when at rest lie folded closely together beneath the anterior pair. In some species the membranous wings are apparently wanting and, in such cases, the coriaceous pair are soldered together along their inner edge and are immovable. The legs are attached to the lower surface of the thorax, one pair to each division. The elytra are attached to the upper surface of the mesothorax and the membranous wings to the upper surface of the metathorax, a small triangular piece at the base of the elytra is known as the *scutellum* (*h* in figure) and is made up of several parts mostly soldered together. The legs are composed of five pieces, *a*, the haunch or *coxa* ; *b*, the trochanter ; *c*, the *femur* or thigh ; *d*, the *tibia* or shank ; *e*, the *tarsus* or foot, and *f* the claw, as shown in the following illustration :—

FIG. 1.



The parts of the mouth are the *maxillæ* (Fig. 2 a), *labium* (Fig. 2 b), *mandibles* (Fig. 3 b) and *labrum* (Fig. 3 a) shown below :—



There are several systems of classification, but the one most commonly received bases the broad divisions primarily on the number of joints in the tarsi or feet, and secondly on the habits of the insect or the structure of the antennæ. This system has the disadvantage of bringing together families naturally widely separate and of removing from their natural groups, families closely affined, but on the whole it is the most convenient of all that have been proposed. In the following list, Lacordaire's terminology and arrangements have been followed and his corrections have been observed. The following conspectus of the greater divisions may be accepted :—

I. Pentamera—five joints in each tarsus.

1. *Geodephaga*—predacious land beetles : includes the Cicindelidæ and Carabidæ.
2. *Hydrodephaga*—carnivorous water-beetles : includes the Dytiscidæ and Gyrinidæ.

Philhydrida (Palpicornes)—water-loving beetles : includes the Hydrophilidæ, Hydrobiidæ and Sphæridiidæ.

Necrophaga—scavengers : includes the Paussidæ, Silphidæ, Nitidulidæ, Trogositidæ, Colydiadæ, Cucujidæ and Dermestidæ.

5. *Brachelytra*—short elytra : includes the Staphylinidæ.
6. *Clavicornes*—clubbed antennæ : includes the Histeridæ.
7. *Lamellicornes*—leaved antennæ : includes the Lucanidæ, Copridæ, Aphodiidæ, Orphnidæ, Hybosoridæ, Geotrupidæ, Passalidæ, Melolonthidæ, Rutelidæ, Dynastidæ, Cetoniidæ.
8. *Serricornes*—elongate filiform antennæ : includes the Buprestidæ, Eucnemidæ, Elateridæ, Malacodermidæ, Ptinidæ and Cleridæ.

II. **Heteromera**—posterior pair of tarsi, 4-jointed, rest 5-jointed.

1. *Trachelia*—head triangular and connected with the thorax by a neck : includes the Lagridæ, Pedilidæ, Anthicidæ, Pyrochroidæ, Mordellidæ, Rhipiphoridæ, Meloidæ.
2. *Atrachelia*—having no distinct neck ; includes the Tenebrionidæ, Cistelidæ.

III. **Pseudo-tetramera**—apparently 4-jointed throughout.

1. *Rhynchophora*—having a beak or rostrum like the weevils : includes the Bruchidæ, Curculionidæ.
2. *Longicornes*—having long horns or antennæ : includes the Prionidæ, Cerambycidæ, Lamiadæ.
3. *Phytophaga*—having neither the beak of the first or the long antennæ of the second group : includes the Crioceridæ, Galerucidæ, Cassididæ, Chrysomelidæ.

IV. **Pseudo-trimera**—apparently 3-jointed.

This section includes a single group comprising the Coccinelidæ, Erotylidæ, &c.

A good authority estimates the number of known species of beetles at 70,000, and these are probably not more than half the total number in existence.

Before proceeding with the list we shall briefly note the principal families that have been recorded from India in the same order as that given above. The first of the Pentamerous group is the family *Cicindelidæ* or tiger-beetles, which are well represented in India by the species of the genus *Cicindela*. They are remarkable

for their bright metallic colours and active habits and frequent dry sandy soils. Their larvæ inhabit holes in the earth, the entrance to which is closed by the insect's head as it lies in wait for its prey. They are very voracious and

Rentamera.

quarrelsome and undergo the change to the pupa state in their cells. A species of *Collyris* is common in the highlands near Mhow. The next family comprises the *Carabidæ* which are especially numerous in species and individuals in India. The species of the genus *Brachinus* belonging to this family are remarkable for secreting in the abdomen a caustic liquor of an exceedingly penetrating odour which they discharge when alarmed and which produces a detonating sound whence their vulgar name 'Bombardier-beetles' is derived. A similar phenomenon has been observed amongst the Indian *Faussidæ*. The beetles of the genus *Calosoma* are of a bright rich colour, but most of the family are clad in black or sober brown. *Siagona* and other genera are found in the nests of white-ants and *Casnonia* is very common in Central India. The entire family conceal themselves in the earth under stones or the bark of trees and are known as ground-beetles. The section *Hydrodephaga* includes the predacious water-beetles which have the body oval and somewhat depressed in form and the posterior four legs adapted for swimming. They pass the first and the last stage of their existence in placid water and are very voracious in their habits, attacking even the small fry of fish. They breathe by means of *tracheæ*, and for this purpose they rise to the surface of the water and admit the air beneath their wing-cases. In the dusk of the evening they change their quarters from one *jhil* or marsh to another. The *Gyrinidæ* or whirligigs differ from the *Dytiscidæ* or diving-beetles in having the antennæ short or stout and so attached to the head as to resemble ears. The *Philhydridæ* have not been closely examined in India. They are amphibious in their habits and are found on the banks of stagnant pools where they live on decaying animal and vegetable matter.

The *Necrophaga* or scavengers include the *Faussidæ*, which are well represented in upper India. Like the

Necrophaga.

beetles of the genus *Brachinus* they have the power, on being alarmed, to emit from the last section of the abdomen a very acrid liquid having an acid reaction which when it

comes in contact with the air turns into smoke with a considerable explosion. Captain Boyes has given an account¹ of this phenomenon in some species (*P. Fichtelii* and others) captured by him near Benares and Almora. The *Silphidæ* or shield-beetles are the sexton-beetles of India and are well known from their habits of excavating the earth below the dead body of a bird, rat or other small animal which they afterwards cover with loose soil and so secure it to provide food for their larvæ. They have been seen to completely bury the body of a crow in a few hours and are found all over the plains. The females lay their eggs in the dead body and when the larvæ appear, their food is around them. The perfect insects frequently emit a fetid odour and when alarmed discharge a thick and dark-coloured liquid from their bodies. The *Nitidulidæ* are also found in carrion, but many species occur on flowers, in fungi and beneath the bark of trees. The *Trogositidæ* are found in the larva state in grain and the *Cucujidæ* live beneath the bark of trees. The *Dermestes lardarius* or bacon-beetle of Europe has been found in Nepál and derives its English name from its fondness for lard, but it does not disdain to feed on skins. It is a minute insect with a long body and 10-jointed antennæ and with the bases of the elytra fawn-coloured and marked with three dark spots.

The great family *Staphylinidæ* belongs to the section *Brachelytra* so called because the wing-cases do not cover the whole of the upper surface of the abdomen, and in consequence the skin of the upper surface where exposed is firm and coriaceous contrary to the general rule. The terminal segment of the abdomen is furnished with two vesicles which are protruded at will and emit an acrid and sometimes fetid vapour. They feed principally on decaying vegetable matter, fungi and rotten timber and do no injury to living trees. Many of them are of minute size and difficult to collect and identify. The *Histeridæ* form a section of the *Clavicornes* or beetles possessing clubbed antennæ and with the *Byrrhidæ* or pill-beetles are distinguished by their habit of rolling themselves into the form of a pill and feigning death when alarmed. They feed on decaying vegetable matter, the dung of herbivorous animals and rotten wood. The larvæ have the same habits and are distinguished by a scaly head

¹ J. A. S. Ben., XII., 421.

of a reddish brown colour and a yellowish white, smooth, soft, thin body.

The *Lamellicornes* comprise a vast assemblage of beetles which prey chiefly on living vegetable tissues. The antennæ usually end in a club or mass consisting of three joints expanded in the form of thinnish plates or leaves disposed in various ways. Some have the appearance of the spokes of a fan, others the leaves of a book or the teeth of a comb or a series of funnels placed above and within each other. The larvæ are furnished with six feet, strong mandibles and are divided into twelve segments. They often remain in the larval stage for several years and protect themselves by a cocoon before entering on the pupa state. They comprise amongst them some of the most common and determined enemies of the forester. The great stag-beetle (*Lucanus*) must be familiar to all visitors to our hill-stations where they are found dead in all the forest-walks about the middle of the rains, having survived only to fulfil their duty in propagating their species. There is hardly one in ten of the oak trees around the settlement at Naini Tâl that is not infested by their larvæ who remain in that state for at least two or three years. The males are distinguished from the females by the abnormally developed mandibles, somewhat resembling the antlers of a stag and hence their name. The larvæ, as already described, are furnished with powerful jaws with which they gnaw the wood into a kind of dust. From this they form cells in the wood in which they undergo the change into the pupa state. Each bores deeply into the tree; cutting channels for itself parallel to the length of the stem up and down. These channels are connected by cross chambers one with another and a portion of the refuse is ejected from the orifice forming the entrance and always shows the presence of the insect within. The *Lamellicornes* are at the same time the most brilliantly coloured of all the Indian insects. *L. multidentatus* is of a most beautiful metallic chestnut colour all over its body, and *L. Gazella* is the type of a section in which the thorax is black and the prominent colour of the elytra is a deep nutty brown. The *Lucanidæ* are common throughout the hills, but do not appear to be found in the plains.

The *Ateuchus sacer*, or sacred scarabæus of Egypt, belongs to the family *Copridæ*, of which there are numerous representatives in India.

A. sanctus of India is in form and colour much the same as the Egyptian sacred beetle. The members of this family are called dung-beetles from the female laying her eggs in a small pellet of dung which she then with the assistance of the male rolls about and pats until it assumes a spherical form. She next excavates a hole in the ground and having rolled the dung-pellet containing her egg into it, carefully covers up the orifice and there the young undergo their metamorphosis. The genus *Onthophagus* contains some beautiful species of a small size and brilliant colour, and Boyes has noted that he has taken one species (*O. igneus*) only in the bodies of dead snakes. The females of the family *Aphodiidæ* are not so careful about the future of their young, but simply lay their eggs in the dung that is to form the food of their larvæ. The *Orphnidæ* affect sandy places and the *Geotrupidæ* are always found near dung. The females of the latter group burrow through the droppings into the ground and there deposit some of the dung and on it an egg, then another layer of dung and an egg until the chamber is filled. The larvæ are oval, fleshy, legless maggots and feed on the dung provided for them. Stoliczka notes that no species of the *Passalidæ* is as yet known from the Himálaya west of Nepál or from any part of Central India or the Panjáb.

The *Melolonthidæ* comprise many beetles for the most part of a brown or sober colour that live on vegetable substances through the whole of their existence. In many species the larvæ remain in that state for three or four years and the perfect insects exist only for a week or two and perish so soon as the female has placed her eggs in a place of safety. The female selects for this purpose a spot near the foot of a tree and there digs a hole and lays her eggs. The larvæ are soft, elongated, of a dirty white or yellowish colour, provided with six short scaly feet, five-jointed antennæ and a scaly head. During the hot weather they devour greedily all vegetable substances near them, and so soon as the winter commences they descend into the earth again and hibernate. In Dehra Dun their ravages were successfully combated by digging up the soil around each plant and collecting the beetles in baskets destroy them by boiling water. This plan soon cleared the plantation of the pest. The magnificent *Euchirus* belongs to this family and has been taken in the Káli valley. The upper side of the body is of a

brilliant metallic green, tinged with copper and strongly punctured: the elytra are nearly black, with a brassy tinge and with numerous bright fulvous spots of irregular form which are so disposed as to form four or five longitudinal lines on each wing-cover. The rhinoceros beetle (*E. Hardwicki*) found near Almora belongs to the *Dynastida* as well as the genus *Oryctes* which affects the decaying trunks of the date-palm. To the Rose-beetles belongs the beautiful *Jumnos Roylei* of Royle's 'Himálaya' found near Mussooree. It feeds on the flowers and tender tissues of plants and is amongst the most remarkable of the forms found in the local fauna.

To the *Serricornes* belong the magnificent metallic beetles known as *Buprestida*. Nothing can exceed the beauty of their appearance, green and gold adorned with rubies, emeralds and diamonds as they flash about in the sun. Their elytra are used for ornamenting dresses and sell for about two rupees per mille. The *Buprestida* pass their larval state in the heart of timber trees and must be reckoned amongst the enemies of the forester. The larva of one species after maturity bores into felled logs of *sál* to the depth of from two to three inches, forming a diamond-shaped orifice and in such numbers as to make the timber useless afterwards. It undergoes its change to the pupa state in the timber and there remains until the metamorphosis is complete. Mr. Thompson has found a *khair* tree (*A. Catechu*) killed by this insect which also attacks the *sál* (*S. robusta*) and mango. A small *Buprestis* of a shining olive colour with yellowish-white spots is frequently found in the timber of the *Pinus longifolia* and when numerous, its larvæ render a log quite unfit for beams as their borings are frequently to a great depth. The mode usually adopted to protect felled timber from the attacks of these insects is to remove the bark as soon after the log is felled as possible and if already infested to immerse the log in water for a few days. The perfect insect deposits her eggs in the bark and when they have hatched, the larvæ make their way into the timber. The removal of the bark renders the log unfit for the purpose of hatching eggs and if the larvæ have already settled in the heart-wood, they perish by immersion in water from want of air. Westwood has figured the beautiful specimen of the *Euxanemida* recorded

in the list under that family. It is of a violet blue colour and typically represents the sub-division of the *Serricornes* known as *Sternoxi* which are characterised by the solid form of the body and by the middle portion of the thorax being elongated and advanced so far as below the mouth. The mesothorax is further usually marked by a groove on each side in which the short antennæ are lodged. The *Elaterida* or springers are well represented in the hills where the brilliant metallic green elytra of *Campsosternus Stephensii* are collected for embroidery. The family *Malacodermida* includes the genus *Lampyris*, in which the species called *jaganu* in the vernacular emits a phosphorescent light from the lower segments of the abdomen.

The brilliant blue *Necrobia violacea* belonging to the family *Clerida* is found in Europe as well as in India and is a carrion feeder. The beetles of the family *Ptinida* are remarkable for their persistence in feigning death when alarmed, so that even when maimed and roasted at a fire they do not stir a limb. The genus *Anobium* which furnishes the death-tick belongs to this family and gives us several representatives amongst the wood-borers in India. In Europe we have also *Scolytus destructor* which makes its burrows in the bark of the elm and *Tomicus typographus* which marks the fir and pine.



Tomicus typographus after Duncan.

In India the representatives of all three genera are known commonly under the name *gún*, of which species attack and bore into all felled timber and bambus and even into the hard heartwood of the hill oak and filled oaken casks of beer and water. The white wood of the *edl* (*Shorea robusta*), suffers much from the same insects and frequently rafters made of immature *edl* saplings fall to pieces from their attacks and pine beams are so completely hollowed out that nothing but the shell remains. Another species allied

to *Anobium* bores pine logs to the depth of a foot, but only when the bark is left on them after being felled. Another attacks the bambu, and there are few bambus of any age without the fine holes made by these small insects for entrance to their feeding ground. Cheroots, books and furniture are equally liable to their attacks, and even the painted Bareilly-made and Dehli-made furniture fall to pieces, pierced and eaten by numerous minute beetles of this family.

The larvæ of *Anobium* are short and soft and are provided with six feet and a hard scaly head and the mouth is furnished with two very strong jaws by which it pierces the hardest wood. The larvæ of *Bostrichus* (*Apate*), another lignivorous genus, are usually curved into an arch composed of twelve distinct rings and provided with scaly feet. They also possess a scaly head and are furnished with strong, gnawing jaws. They undergo the transition to the pupa and perfect state in the wood and only leave it to perpetuate their race. The dust seen at the mouth of and around the holes that mark the presence of these insects is simply the substance of the wood passed out by them in the form of excrement. As they all breathe by *tracheæ*, the simple and only plan for getting rid of them is to immerse the wood infected in water for a sufficient time to drown them.

The section Trachelia of Heteromorous beetles includes many vegetable feeders most of which are minute insects very difficult to identify. Amongst the *Meloidæ* or oil-beetles, which are so named from their possessing the power of discharging an oily fluid from their legs, we have the several genera to which belong beetles with vesicating properties known generically as Spanish flies. *Mylabris cichorii*, Fabr. is common in the south of Europe and India and is official in the Indian Pharmacopœia. In upper India we have *Melœ trianthema*, *Cantharis* (*Lytta*) *gigas* and *violacea*, and in Madras, *Mylabris pustulata* and *puncta*, besides other species in other Provinces. Larvæ of the genus *Cantharis* are said to be parasitical on the bodies of the Hymenoptera and Diptera. The beetles of the section *Atrachelia* are distinguished by the absence of a neck and include the large number arranged under the family *Tenebrionidæ*. Nearly all are terrestrial in their habits and dwell

on the ground under stones, in sandy places or in dark parts of buildings and in old walls. They are usually of a black or ashen colour and from this derive their name. *Blaps* distinguished by its square and slightly convex thorax frequents the store-room and the genus *Tenebrio* furnishes the meal-worm of the flour bin.

The beetles comprising the section Pseudo-tetramera possess apparently only four joints in each tarsus, but in most cases there are in reality five joints. They include the great tribes of weevils (*Rhynchophora*) and long-horns (*Longicornes*), both of which are so destructive to all forms of vegetation living and dead. The *Rhynchophora* have the front of the head elongated into a rostrum or snout and attack living trees and plants, grain and timber. To this tribe belongs the *Bruchus pisi* or pea-grub, which deposits its eggs in the tender germ where they are hatched and eventually the pupa stage is reached and the perfect insect departs through a minute hole in the mature pea. The Indian representative, if not identical, has similar habits and attacks peas, beans and gram and the seeds of the timber trees of the same family. A species of this family, very



Rhynchites Bacchus.

common in our forests, has exactly the same habit. This insect lays its eggs in the flower of the *adi* and there they hatch and the larva grows with the flower and feeds on the fruit until it is time for it to undergo the change into the pupa state. It then gnaws off the fruit from the stalk and falls with the fruit to the ground, where it eats its way out and buries itself a few inches in the earth to become a pupa and then a perfect insect. Each seed-pod of the *adi* often contains two or four larvae of this species. Amongst the

Longicornes we have the *Calandra granaria* which feeds upon wheat, barley (maize), and the like and *Calandra oryzae*, the weevil of rice.



Calandra oryzae.

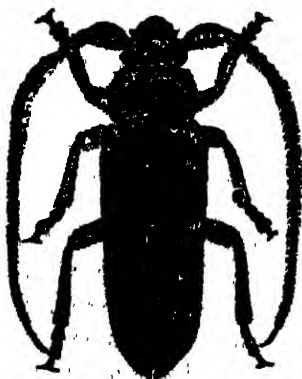
Both are the makers of the fine holes found in the grains that they attack. The corn-beetle is about an eighth of an inch in length and of a reddish brown colour. The female deposits her eggs on the corn after it has been stored and the larvæ bore into the grain and feed on the flour. They undergo their change into the pupæ state within the grain and emerge a perfect insect ready to commence the cycle of change afresh. Kiln-drying the grain appears to be the only effective method for getting rid of it.

The long-horns are also known as *Capricornes* or goat-horned from the length and form of their antennæ.

Longicornes. Their larvæ look like stout, elongated white worms and the segments of their bodies are much alike in all.¹ All the segments are a little swollen; the first, however, is the largest and is covered above and below with a leathery plate. They have rudimentary antennæ. These larvæ live in the trunks and branches of trees and in the cellular structure of some herbaceous plants. Since they never come to the light, they are colourless and have soft integuments, but as they feed upon the wood out of which they form galleries they have very strong jaws and a very stout head. As they do not want to walk much in their galleries they have no legs except in a very rudimentary form; their swollen segments enabling them to climb. This history of the peculiar structure of these larvæ presents striking analogies with that of the wood-eating larvæ of the *Lepidoptera* and *Hymenoptera* and the existence of similar adaptations in very different insects in order to enable them to live under the same conditions of existence is

¹ *Duncea. Transf. Ins., 325.*

very remarkable. The strength of the jaws, too, differs according to the density of the tissues of the plant on which the insects live. The abdomen of the female in certain genera is provided with an ovipositor by which she can place her eggs through the crevices of the bark of trees in the interior where they hatch and the larvæ find their proper food. The larvæ make a cocoon by joining together fragments of wood and bits of vegetable matter with their saliva and within it undergo their transformation into nymphs. A species of *Lamia* attacks the *Acacia*, and it is believed¹ that one of the *Prionidæ* furnishes the white-grub of the tea-shrub. The perfect insect makes an incision at the root of a tea bush and there deposits her eggs and the larva as soon as it is hatched bores into the heart of the stem. It then either hollows out the stem upwards or descends to the tap root first and then moves upwards. In either case the bush dies whilst the larva turns into a pupa in the ground below. As a rule these insects attack plants in which the healthy flow of sap has been interrupted by injury either from the hoe or fire. Similarly the species of *Cerambyx* that attacks the *sâl* in log only does so when the bark is allowed to remain on it and the living tree only in parts where it has been injured and partial decay has set in. The grubs of this family are known under the vernacular name *makora* in the sub-montane tract and Rohilkhand and are found in the catechu, *tûn*, *sisu*, *riûni*, mango, pine and even other trees of which the sap possesses a penetrating odour. *Sâl* saplings suffer



Oplatocera callidioides.

¹ Thomson.

from another species of *Longicornes* of which the larva cuts a way for itself in the young soft stem from the root to the highest point it can reach and destroys the young tree. Young trees affected by this grub can be recognized by the heaps of excrementitious matter looking like saw-dust that are expelled by the insect from the aperture forming the opening to its burrow. A minute species does considerable damage to the outer tissues of the wood beneath the bark in the *khair*. The *semal* (*Bombax malabaricum*), *súngna* (*Moringa pterygosperma*) and *rúngna* (*Erythrina suberosa*) are subject to the ravages of another species of the *Lamiidæ* of which *Monochamus Roylii* is a good example. The larva of this insect is very large and Mr. Thompson collected from one log of *súngna*, forty-three perfect beetles, about a dozen larvæ and five or six pupæ though the log was not above six feet in length and thirty inches in girth. The *bhainsh* (*Salix tetrasperma*), *dhák* (*Butea frondosa*), *jhingan* (*Odina Wodier*) and the cotton-tree are infested by another species of the same family which forms a solid cocoon of a substance resembling lime some sixteenth of an inch in thickness. Enough has been written to show the economical importance of a study of these insects.

The sub-division *Phytophaga* comprises those pseudo-tetramerous beetles that have neither a rostrum nor long antennæ. They are further distributed into the *Eupoda* including the *Sagridæ* and *Crioceridæ* and the *Cyclica* containing the *Hispidæ*, *Cassididæ*, *Galerucidæ*, *Eumolpidæ*, *Chrysomelidæ* and *Erotylidæ*. The *Sagridæ* are distinguished by the development of the thighs and some of them are most conspicuous for the brilliant colour of their elytra. The *Crioceridæ* are small insects remarkable for their handsome form and in some species for their bright colours. Their larvæ have soft bodies and protect themselves by covering two-thirds of the upper portions of their bodies with excrementitious matter which in colour and appearance closely resemble the vegetable tissues on which they feed. This they are enabled to do by the position of the anal vent which is placed on the side of the back a little removed from the extremity of the abdomen, so that the excrements are expelled in a line with the body. The larvæ of the *Hispidæ* have a similar habit, and allied to them are the

Cassididae or tortoise beetles, so called from the thorax being more or less semi-circular and covering the head. The last segment of the abdomen of the larvæ is furnished with a fork which receives the excrementitious matter designed to cover and protect the soft upper portion of the body. The *Chrysomelidae* or golden beetles are also leaf-eating insects, many of which are adorned with the most brilliant metallic colours. Their larvæ are provided with the two-pronged fork for the fixation of the covering of stercoraceous matter as in the preceding family. To this family belongs the notorious potato-beetle of Colorado (*Doryphora decemlineata*) and to the *Galerucida*, the *Haltica nemorum* or turnip fly.

To the last great group having three joints in each tarsus belong the *Coccinellidae* or lady-birds which are the same in form in India as in Europe. They are amongst the most useful scavengers of the flower garden, their larvæ living for the most part on the Aphides or plant lice. They have the power of discharging from the joints of their limbs a yellow fluid which has a disagreeable, penetrating odour. The *Endomychidae* are chiefly found on fungi in forests and damp places and are numerous in individuals.¹

¹To the student I would recommend Lacordaire's *Coleoptères* with continuation, 12 vols., Paris, 1854-76, as the most comprehensive, most recent and careful of all the works on beetles. From a study of it and the references given in the foot-notes, he will be able to find out for himself where to look for information. I have endeavoured to give some hints in this respect in the references at foot of the list of each family, but it would be beyond the scope of the present work to do more. There is no royal road to the study of Entomology and, as regards Indian insects, the difficulties are very great and are considerably enhanced by the action of writers who think that they advance the interests of science by altering names on some pretence or another and only succeed in disheartening those who are anxious to aid them. Namegrabbing, altering and restoring is that part of the work which is of the least possible practical or mental value. The following works will also be found useful:—

Spécies général des Coleoptères de la collection de M.le Comte Dejean. Paris, 1825-30.

Observationes nonnullæ in Coleoptera Indiæ Orientalis by Perty, Munich, 1861.

Annulosa Javanica by MacLeay and Horsfield. London, 1848.

Synopsis of Nepal Insects (Coleoptera) by Hope. Gray's Zool. Misc. I. London, 1831.

Types of Coleoptera, British Museum series by C. O. Waterhouse. London, 1879.

COLEOPTERA.—Beetles.

I.—Pentamera: five-jointed.

A.—GEODEPHAGA.

Family *Cicindelidæ*—Tiger-beetles.

Cicindela, *Linn.*—*Princeps* [=fasciata, *Hope*: aurofasciata, *Guér.*], *Vigors*: *Colon*, *Klug*: *triramosa*, *acuminata*, *superba*, *Kollar*: *aurovittata*, *chloropus*, *tremula*, *Brullé*: *hymalaica* (*Kash.*) *Redt.*: *dives*, *Gory*: *quadrinaculata*, *Aud.*: *Candei*, *doriolineata*, *speculifera*, *anchoralis*, *psammodroma*, *niveicincta*, *Chevol.*: *Prinsepsii*, *Saund.*: *varipes*, *octogramma*, *intermedia*, *grammophora*, *imperfecta*, *albopunctata* *leucoloma*, *striatifrons*, *dromicoides*, *viridilabris*, *chlorochila*, *tetraspilota*, *Chaudoir*: *viridula*, *Quens.*: *catena*, *Oliv.*: *assamensis*, *latipennis* (*As.*), *Hopei*, (*As.*); (*Calochroa*) *Shivah*, *Parry*: *octonotata*, *equestris*, *bicolor*, *6-punctata* (*Mad.*, *Cal.*), *Hope*.

(*Abroscelis*) *tenuipes*, *upsilon*, *longipes*,
Hope.

(*Catoptria*) *speculifera*, *Guér.*

(*Ænictomorpha*) *analis*, *Fabr.*

Tetracha, *West.*—*euphratica* (*Gen. I.*), *Oliv.*

Apteroessa, *Hope*.—*grossa* (*Mad.*), *Fabr.*

Tricondyla, *Latr.*—*connata* (=aptera *Dej.*), *Lam.*

Collyris, *Fabr.*—*attenuata* (*Kash.*), *Redt.*: *ruficornis flavitarsis*,
Brullé: *maculicollis*, *Chaud.*

References.

Westwood.—*Mod. class. Ins.* I. 47. 1839.

Lacordaire.—*Spéc. Gén.* I., 1, 1854. *Indian species*; *Chevrolet*, *Rev. Zool.*, 1845, p. 95; *Chaudoir*, *Bull. de Moscou*, 1850, p. 11; 1852, p. 4; *Parry*, *Trans. Ent. Soc.*, IV., 84; *Hope*, *An. Mag. N. H.*, n. s., IV., 169.

Family *Carabidae*—Ground-beetles.

Omophron, *Latr.*—*vittatum*, *pictum*, *Wied.* : *maculosum*, *Chaud.*

Nebria, *Latr.*—*Xanthacra* (*Him.*), *Chaud.*

Carabus, *Linn.*—*lithariophorus* (*Mus.*), *Boysii* (*N. I.*), *Tatum* :
Wallichii (*As.*), *Hope* : *cashmiricus* (*Kash.*),
Redt.

Calosoma, *Web.*—*nigrum* (*As.*), *Parry* : *chinense*, *Kirby* : *indicum*, *orientale* (*Bom.*), *Hope.*

Hexagonia, *Kirby*—*terminata*, *Kirby.*

Trigonodactyla, *Dej.*—*cephalotes*, *Dej.* : *proxima*, *Lap.*

Casnonia, *Latr.*—*bimaculata* (*Kash.*), *Redt.* : *fuscipennis*, *Chaud.*

Ophionea, *Esch.*—*cycanocephala* (*Ben.*), *Fabr.*

Drypta, *Fabr.*—*crenipes*, *Wied.* : *pallipes*, *virgata*, *amabilis*,
Chaud. : *mandibularis*, *Lap.*

Galerita, *Fabr.*—*attelaboides*, *Fabr.*

Omphra, *Leach*—*hirtus*, *Fabr.* : *pilosus*, *atratus*, *Klug* : *complanata*, *Reiche.*

Pheropsophus, *Sol.*—*quadripustulatus*, *stenoderus*, *amoenus*, *lisoderus*, *lineifrons*, *Chaud.*

Brachinus, *Web.*—*pictus* (*Bom.*), *Hope* : *Girioneri*, *Eyd.* : *figuratus*, *Chaud.*

Mastax, *Fisch.*—*histrion*, *Fabr.* : *pulchellus*, *Dej.* : *longipalpis*,
Wied.

Calleida, *Dej.*—*Boysii*, (*N. I.*), *Chaud.*

Cymindis, *Latr.*—*quadrimaculata* (*Kash.*), *Redt.* : *stigmula*,
Chaud.

Metabletus, *Sch.*—*obscuroguttatus* (= *spilotus*, *Dej.*), (*Him.*),
Deft.

Lionychus, *Wis.*—*holosericeus* (*N. I.*), *Chaud.*

Lebia, *Latr.*—*princeps*, *Boysii*, *basalis*, *Chaud.* : *atra*, *Lap.* :
brunnea, *longithorax*, *Wied.*

Fromecoptera, *Dej.*—*marginalis* (*Ben.*), *Wied.*

Tetragonoderus, *Dej.*—*trifasciatus*, *disopunctatus*, *Chaud.*

- Masoreus*, *Zieg.*—*orientalis*, *opaculus*, *sericeus*, *pleuroneotus*, *Dej.*
Plochionus, *Dej.*—*nigrolineatus* (Ben.), *Chaud.*
Catascopus, *Kirby.*—*nitidulus*, *Lap.* : *Withillii*, *Hope* : *elegans*,
Chaud.
Siagona, *Latr.*—*pubescens* (Ben.), *Chaud.*
Luperca, *Lap.*—*lævigatus* (Dec.), *Fabr.*
Anthia, *Web.*—*orientalis*, *Hope.*
Scapterus, *Dej.*—*Guerinii*, *Dej.*
Clivina, *Latr.*—*memnonia*, *lobata*, *Dej.* : *assamensis*, *indica*,
striata, *extensicollis*, *melanaria*, *bengalensis*,
ephippiata, *Putz.*
Craspedophorus, *Hope.*—*geniculatus*, *chalcocephalus*, *Wied.* :
chlorocephalus, *Koll.* : *transversalis*,
bifasciatus, *Lap.*
Diaphoropsophus, *Chaud.*—*Mellyi* (Ben.), *Chaud.* : *concinus*
(Ben.), *Laf.*
Rhopalopalpus, *Laf.*—*pæciloides* (N. I.), *Laf.*
Chlænius, *Bon.*—*porcatus*, *Gory.* : *neelgheriensis*, *Guér.* : *janthi-*
nus (Kash.), *Redt.* : *flavofemoratus*, *Lap.* :
nepalensis, *Sykesii* (Bom.), *Hope.*
Hololeius, *Laf.*—*nitidulus*, *Dej.*
Oodes, *Bon.*—*vivens*, *Wied.* : *sulcatus*, *Esch.*
Badister, *Clairv.*—*thoracicus*, *rubidicollis*, *5-pustulatus*, *Wied.*
Idiomorphus, *Chaud.*—*Guerinii* (N. I.), *Chaud.*
Pachytrachelus, *Chaud.*—*cribriceps* (N. I.), *Chaud.*
Barysomus, *Dej.*—*Gyllenhalii*, *semivittatus*, *Dej.*
Harpalus, *Latr.*—*quadricollis* (Kash.), *Redt.*
Anoplogenius, *Chaud.*—*discophorus* (N. I.), *Chaud.*
Trigonotoma, *Dej.*—*viridicollis*, *planicollis*, *Dej.*
Eccoptogenius, *Chaud.*—*mæstus* (N. I.), *Chaud.*
Catadromus, *Mach.*—*tenebrioides*, *Oliv.*
Feronia, *Latr.*—*nepalensis*, *Hope.*
Strigia, *Brullé*—*maxillaris*, *Brullé.*

- Sphodrus*, *Clairv.*—*indus* (Him.), *Chaud.*
Calathus, *Bon.*—*angustatus* (Kash.), *Redt.*
Euleptus, *Klug.*—*ooderus* (Him.), *Chaud.*
Dicranoncus, *Chaud.*—*femoralis* (Him.), *Chaud.*
Callistus, *Bon.*—*coarctatus* (N. I.), *Laf.*
Lasiocera, *Dej.*—*orientalis* (N. I.), *Chaud.*
Bembidium, *Latr.*—*indicum* (Him.), *Chaud.*

References.

Westwood.—*Mod. class. Ina. I.*, 57, 1839.

Lacordaire.—*Spéc. Gén. I.*, 34, 1854. Indian species; *Chaudoir*, *Bull. de Moscow*, 1842-52: *Wiedemann Mag. Zool. I.*, 2, 69: II. 58, 60: *Dejean's catalogue*, 1825-31. *Parry. An. Mag. N. H.*, n. 2, XIV., 454.

B.—HYDRODEPHAGA.

Family *Dytiscidae*—Diving-beetles.

- Hyphydrus*, *Illig.*—*lyratus*, *Swartz.*
Hydroporus, *Olairv.*—*quadricostatus* (Bom.), *Aubé.*
Hydrocanthus, *Say.*—*luctuosus*, *Aubé.*
Laccophilus, *Leach.*—*parvulus* (Bom.), *flexuosus* (Mad.), *Aubé.*
Colymbetes, *Clairv.*—*lineatus* (Kash.), *Redt.*
Cybister, *Curtis.*—*limbatus* (As.) *Fabr.*: *Guerinii* (Nep.), *ben-galensis*, *indicus*, *Dejeanii* (Mad.), *posticus*, *bisignatus*, *Aubé*: *tripunctatus*, *Oliv.*: *comptus*, *pauperculus*, *White*: *bimaculatus* (Nep.) *Hope*: *rugulosus* (Kash.), *Redt.*
Hydaticus, *Leach.*—*vittatus*, *Fabr.*: *festivus*, *Ill.*: *Fabricii*, *Macl.*: *signatipennis*, *Dejeanii* (Mad.) *Aubé.*

References.

Erichson.—*Genera Dytiscorum.* Berlin, 1832.

Westwood.—*Mod. Class. Ina. I.*, 95, 1839.

White.—*Nomenclature of the Hydrocanthari in the British Museum*, 1847.

Aubé.—*Spéc. Gén. des Hydro. et des Gyr.* Paris 1839 (Vith volume of Dejean).

Lacordaire.—*Spéc. Gén.*, I., 403, 1854.

Family *Gyrinida*—Whirligigs.

Gyrinus, *Geoff.*—*nitidulus*, *Fabr.*: *indicus*, *Aubé.*

Orectochilus, *Esch.*—*gangeticus*, *Wied.*: *semivestitus* (*Ben.*),
Gubr.: *specularis*, *Aubé.*

Dineutus, *MacL.*—*australis*, *spinosus* (*Mad. Nep.*), *Fabr.*: *sub-*
spinosus, *Klug*: *Comma*, *Thun.*: *ciliatus*,
Forsk.: *indicus* (*Nep.*), *unidentatus*, *Aubé.*

References.

Lacordaire.—*Spéc. Gén.*, I., 433, and as in preceding.

C.—PHILHYDRIDA.

Family *Hydrophilida*—Water-lovers.

Hydrophilus, *Geoff.*—*olivaceus* (*Mad.*), *Fabr.*: *viridicollis* (*Kash.*),
cashmiriensis (*Kash.*), *Redt.*

Sternocophus, *Solier.*—*rufipes* (*As.*) *Fabr.*

Family *Hydrobiida*.

Amphiops, *Erichs.*—*gibbus*, *Illiger.*

Family *Sphæridiida*.

Cyclonotum, *Erichs.*—*orbiculare*, *abdominalis*, *Fabr.*: *capense*,
Dej.

References.

Westwood.—*Mod. Class. Ina.* I., 111, 1839.

Lacordaire.—*Spéc. Gén.*, I., 443, 1854.

Mulsant.—*Hist. Nat. des Col. de France (Palpicornes)*: Paris, 1844.

D.—NECROPHAGA.

Family *Paussida*.

Cerapterus, *Sweder.*—*latipes* (*Ben.*), *Swed.*

Ceratoderus, *West.*—*bifasciatus* (*Morad.*), *Kollar.*

Merismoderus, *West.*—*Bensoni* (*N.-W. P.*), *West.*

Platyrhopalus, *West.*—*denticornis* (*N.-W. P.*) *Donov.*: *angustus*
(*Mus.*); *unicolor*; *acutidens* (*Nep.*);
Mellii (*Mad.*); *suturalis* (*Mhow*); *aplus-*
trifer (*Ben.*) *West.*: *Westwoodii* (*Ben.*),
Saund.: *intermedius* (*N. I.*), *Benson.*

Panossus, Linn.—*pilicornis* (Mus.) ; *thoracicus* (N. I.) ; *Fichtelii* (Ben. Him.), *Donov.* : *nauceras* (Him.), *phloiophorus* (Mus.) ; *Baconis* (N. I.), *Benson* : *tibialis* (Ben.) ; *Hearseyanus* (Benares) ; *Hardwickii* (Almora) ; *Saundersii* (N. I.) ; *Boysii* (Mhow) ; *denticulatus* (N. I.) ; *cognatus* (Ben.) ; *fulvus* ; *Stevensianus* (N. I.) ; *politus* (N. I.) ; *rufitarsis* (N. I.), *Jerdoni*, *West.*

References.

Westwood.—Mod. Class, I, 150, 1839 : Monograph of the Paussidae, Arc. Ent., II, 1, 37, 161 (1845) : Cab. Or. Ent. t. 41 : An. Mag. N. H. n. s. VII. 533 : VIII. 449. X. 409.

Lacordaire.—Spéc. Gén., II., 1, 1854. Indian Species ; *Benson*, Cal. J. N. H. *Donovan*. Ina. India, t. 4, 5. *Boyes* J. A. S. Ben. XII. 221.

Family *Silphidae*—Shield-beetles.

Silpha, Linn.—*osculans* (= *Diamesus osculans*, *Hope*), (Ben.),
Vigors : *chloroptera* (= *tetraspilota*, *Hope*)
(Bom.), *Lap.* : *ioptera* (Kash.), *Redt.*

Apatetica, West.—*lebioides* (Him.), *West.*

Catops, Paykull—*vestitus* (N. I.), *Murray.*

References.

Westwood.—Mod. Class. Ina. I. 135, 1839 : Cab. Or. Ent. t. 41.

Lacordaire.—Spéc. Gén., II., 192, 1854.

Family *Nitidulidae*.

Carpophilus, Leach.—*obsoletus*, *Erichs.*

References.

Westwood.—Mod. Class, I. 140, 1839.

Lacordaire.—Spéc. Gén., II., 297, 1854.

Murray.—Monograph of the Nitidulids. 1864.

Family *Trogonitidae*.

Alindria, Erichs.—*orientalis* (Kash.), *Redt.*

Melambia, Erichs.—*crenicollis* (Ben.), *Guén.*

References.

Westwood.—Mod. Class, I., 145, 1839.

Lacordaire.—Spéc. Gén., II., 322, 1854.

Family *Colydiadae*.

Meryx, Latr.—*rugosa*, *Latreille.*

References.

Lacordaire.—Spéc. Gén., II., 352, 1854.

Family *Cucujidae*.

Heotarthrum, *New.*—*bistriatum*, *Lap.* : *heros*, *rufipennis*, *Fabr.* :
brevifossam, *New.* ; *depressum*, *Smith.*

Ancistria, *Erichs.*—*cylindrica*, *West.*

Cucujus, *Fabr.*—*bicolor* (*Nep.*), *Smith.*

Læmophlæus, *Dej.*—*sanguinolentus* (*Nep.*) *Hope* : *concolor*, *ob-*
soletus, *Smith.*

References.

Westwood.—*Mod. Class. Ins.*, I., 148, 1839. *Cab. Or. Ent.* t. 41.

Smith, F.—*List of the Cucujidae in the British Museum*, 1851.

Lacordaire.—*Spéc. Gén.*, II., 390, 1854.

Family *Dermestida*.

Dermestes, *Linn.*—*lardarius* (*bacon-beetle*, *Nepál*), *Linn.* : *cada-*
verinus, *Fabr.*

E.—BRACHELYTRA.

Family *Staphylinida*.

Myrmedonia, *Erichs.*—*ochraceus* (*Him.*), *Hope.*

Tachinus, *Graven.*—*melanarius* (*Ben.*), *Erichs.*

Platyprosopus, *Mann.*—*tamulus* (*Mad.*), *fuliginosus* (*Ben.*)
Erichs.

Palæstrinus, *Erichs.*—*Sykesii*, *mutillarius* (*Ben.*), *Erichs.*

Caranistes, *Erichs.*—*Westermanii* (*Ben.*), *Erichs.*

Staphylinus, *Linn.*—*cinctus* (*Kash.*), *Redt.*

References.

Westwood.—*Mod. Class. Ins.* I. 161, 1839 : *An. Mag. N. H.* n. s. VII, 149.

Erichson, G.—*Gen. et Spéc. Staphylinorum.* Berlin, 1839-40.

Lacordaire.—*Spéc. Gén.* II. 17, 1854.

F.—CLAVICORNES.

Family *Histerida*—Mimic-beetles.

Platysoma, *Leach.*—*atratum* (*Ben.*), *Er.*

Hister, *Linn.*—*bipustulatus*, *Fabr.* : *orientalis*, *Payk.* : *distortus*,

Ill. : *punctulatus*, *bengalensis*, *Wied.* : *melana-*
rius, *pulvatus*, *coracinus*, *scævola*, *lutarius*, *Er.* :
parallelus (*Kash.*), *Redt.*

Notodoma, *de Mars.*—*globatum* (*Mad.*), *Mars.*

Cypturus, *Erich.*—*ænescens* (Ben.), *Erich.*

Saprinus, *Erich.*—*4-guttatus*, *Fabr.*: *speciosus*, *cupreus*, *Erich.*

References.

Westwood.—*Mod. Class. Ins.*, I. 181, 1839.

Lacordaire.—*Spéc. Gén.*, II., 242, 1854.

G.—LAMELLICORNES.

Family *Lucanids*—Stag-beetles.

Lucanus, *Fabr.*—*lunifer* [= *Lama*, *Burm.*: var. ♂ = *villosus*, *Hope*], (*Him.*); *Cantori* (*As.*); *Forsteri*, (*As.*); *MacClellandii* (*As.*); *Buddha* (*As.*); *Brahminus* (*As.*); *Rafflesii* (*As.*); *Mearesii* [♀ = *nigripes*, *Hope*], (*As.*); *Parryi* [♀ = *serricollis*, *Hope*], (*As.*); *Baladeva* (*As.*); *platycephalus* (*As.*); *Hope*: *Gazella* [♀ = *Delessertii*, *Guér.* and ♂ = *Cuvera*, *Prinseprii*, *Burmeisteri* (*Mad.*), *castanopterus* (*Nep.*), *Hope*], (*Nep.*), *Fabr.*: *multidentatus* (*As.*), *inquinatus*, *Jenkinsii* (*As.*), *strigiceps* (*Him.*), *West.*: *bicolor* (*Nep.*), *Oliv.*: *carinatus* (♂ = *alces Oliv.*: var. ♂ = *dux*, *West.*; *camelus*, *Oliv.*), *Linn.*

Dorcus, *MacL.*—*nepalensis* [var. ♂ = *similis*, *Hope*; *Chevrolatii*, *Chenu*; *Parryi*, *Hope*], (*Nep.*); *Rafflesii* (*As.*); *MacLeayii*: *Spencei*, (*As.*): *bulbosus* (*As.*); *bengalensis*; *curvidens*, (*As.*); *parallelus*; *Eschscholtzii*; *lineato-punctatus* *Blanchardi* (*As.*); *Tityus* (*As.*); *astacoides*; (*As.*); *foveatus* (*As.*); *Westermanni* (*As.*), *de Hahnii* (*As.*), *punctilabris* (*As.*); *omissus* (*As.*); *Hope*: *Giraffa* [var. ♂ = *Downesii*, *Confucius*, *Hope*]: *Saiga* [♂ = *Reichii*, *Hope*; ♀ = *vitulus*, *Hope*], (*As.*), *Olivier*: *bucephalus* [♂ = *Briareus*, *Hope*; ♀ = *rugifrons*, *Hope*], (*As.*); *bubalus*, (*As.*), *Perty*: *cribriceps* (= *molossus*, *Hope*), *Chevrol.*: *malabaricus*, *West.*

Figulus, *MacL.*—*confusus* (*Him.*), *West.*

References.

Westwood.—Mod. Class, I., 185, 1839: Cab. Or Ent. t. 8, 10, 26. An. Mag. N. H. n. s. VIII. 124.

Lacordaire.—Spéc. Gén. III. 4, 1856.

Hope.—Catalogue of Lucanoid Coleoptera. 1845: Royle's Him.: Gray Zool. Misc.: Trans. Linn. Soc., XVIII. 587: XIX 105 and An. Mag. N. H. VI. 299; VIII. 302: IX. 247, XII. 363.

Family *Copridæ*—Dung-beetles.

Ateuchus, *Weber*.—*sanctus* (Mad.) *Fabr.*: *gangeticus*, Brahminus, *Lap.*: *convalescens*, *costatus*, *Wied.*: *devotus* (Kash.) *Redt.*

Sisypus, *Latr.*.—*neglectus*, *Gory*: *histus*, *Weid.*: *cashmiriensis*, *Redt.*

Gymnopleurus, *M.*.—*miliaris*, *cyaneus* (Mad.) *Leei*, *Koenigii* (Mad.) *granulatus*, *Hellwigii* (Mad.) *sinuatus*, *Fabr.*: *mundus*, *exanthema*, *Wied.*: *opacus* (Kash.) *Redt.*: *Dejeanii*, *capicola*, *sumptuosus*, *indicus*, *impressus*, *Lap.*

Copris, *Geoff.*.—*Sabæus* (Mad.), *nanus* (Mad.), *Midas*, *capucinus*, *Bucephalus*, *orientalis*, *fricator*, *Fabr.*: *6-dentata* (Kash.), *Sacotala* (Kash.), *Redt.*

Onthophagus, *Latr.*.—*Pithecius*, *seniculus* (Mad.), *metallicus*, *pardalis*, *Pirmal*, *pygmæus* (Mad.), *parvulus*, *Catta* (Mad.), *bifasciatus* (Mad.), *dromedarius*, *4-dentatus*, *tarandus*, *unifasciatus* (Mad.), *Bonasmus*, *pallipes*, *Corvus*, *Ibex*, *nuchidens* (Mad.), *Tragus* (As.), *Antilope*, *fuscopunctatus*, *Dama*, *vitulus*, *Mopsus*, *spinifex* (Mad.), *æneus* (Mad.), *centricornis* (Mad.), *unicornis* (Mad.), *furculus*, *4-cornis* (Mad.), *lævigatus*, *politus* (Mad.), *aterrimus*, *pusillus*, *Fabr.*: *erectus obtusus*, *3-cornis*, *punctulatus*, *divisus*, *senescens*, *ramosus*, *tricerus*, *lamina*, *trituber*, *bicuspis*, *setosus*, *hircus*, *troglodyta*, *luteipennis*, *Wied.*: *igneus*, *Vigors*: *suturatus*, *Gerw.*: *Elliotti* (Mad.), *imperator*, *tigrini*, *Lap.*: *phanocoides* (Him.), *Hope*: *difficilis*, *Le Ge.*: *Brama* (Kash.), *angulatus* (Kash.), *excavatus* (Kash.), *Redt.*

Oniticellus, *Zieg.*—*Rhadamistus* (Mad.) *femoratus*, *cinctus* (As.), *Fabr.*: *Diadema*, *pictus*, *niger*, *Wied.*

References.

Westwood.—Mod. Class, I, 207, 1839.

Lacordaire.—Spéc. Gén., III., 61, 1856. Indian species: *Fabricius*, *passim*.

Family *Aphodiidae*.

Aphodius, *Ill.*—*sorex*, *elongatulus*, *analis*, *obsoletus*, *mæstus*, *marginellus* (Mad.), *atricapillus*; *impudicus*, *Fabr.*: *elegans*, *All.*: *diadema*, *cornutus*, *discus*, *rufopustulus*, *Wied.*: *hirtipes* (Kash.), *gonagricus* (Kash.), *Redt.*: *irregularis* (Him.), *Hope*.

Chatopisthes, *West.*—*fulvus* (Him. Cen. I.), *West.*

Chiron, *MacL.*—*sulcithorax*, *Perty*: *digitatus*, *Fabr.*: *assamensis*, *Hope*.

References.

Westwood.—Mod. Class, Ins., I, 207, 1839.

Lacordaire.—Spéc. Gén., III., 112, 1856.

Family *Orphnidae*.

Orphnus, *MacL.*—*bicolor*, *Fabr.*: *mysorensis*, *picipus* (Ben.), *impressus* (Cen. I.), *nanus* (Cen. I.), *West.*

Ochodæus, *Meg.*—*chrysomelinus*, *Fabr.*: *lutescens*, *pictus*, *West.*

References.

Westwood.—On certain Lamellicorn beetles. Trans. Ent. Soc. IV., 155: II., 2nd Ser., 59.

Lacordaire.—Spéc. Gén., III., 127, 1856.

Family *Hybosoridae*.

Hybosorus, *MacL.*—*orientalis*, *Hope*: *Roei*, *West.*

Phæochrous, *Lap.*—*emarginatus*, *Lap.*: *dubius*, *indicus*, *West.*

References.

Westwood.—Trans. Ent. Soc., IV., 160. An. Mag. N. H. n. s. XI., 215.

Lacordaire.—Spéc. Gén., III., 122, 1856.

Family *Geotrupidae*—Dor-beetles.

Athyrens Mac-Leay.—*orientalis*, *Lap.* : *frontalis* (As.), *Parry*.
Bolboceras, Kirby.—*Cyclops* (As. Cen. I) *Fabr.* : *sulcicollis*, *impressus*, *Wied.* : *grandis*, *Calanus* (Bom.), *indicus* (Cen. I), *Hope* : *ferrugineus*, *carenicollis*, *Lap.* : *Laportei* [= *ferrugineus*, *Lap.*], *Westwoodii* [= *furcicollis*, *West.*], *Hald.* : *lævicollis* ; *lateralis* (Bom.) ; *capitatus* (As.) ; *inæqualis* ; *bicarinatus* ; *dorsalis* ; *nigriceps* ; *transversalis*, *West.*

Geotrupes, Latr.—*orientalis* (Him.), *Hope*.

References.

Westwood.—*Mod. Class*, I., 201, 1839. *Trans. Linn. Soc. XX.*, 453 : *An. Mag. N. H. n. s. XIV.*, 454 : *XV.*, 438 : 2nd Ser. II., 143, 353.

Lacordaire.—*Spéc. Gén.* III. 138, 1856.

Family *Passalidae*.

Ceraopes, Kaup—*Ansteni* (As.), *Stol*.
Tæniocerus, Kaup—*bicuspis* (As.), *Kaup*.
Pleurarius, Kaup—*brachyphyllus* (Nil.), *Stol*.
Leptaulax, Kaup—*dentatus*, *bicolor* (As.), *Fabr*.
Aceraius, Kaup—*grandis* (As.), *Burm.* : *emarginatus* (As.). *Fabr*.
Basilianus, Kaup—*cancrus* (As. Nep.), *Perch.* : *neelgheriensis* (Nil.), *Guér.* : *Cantoris* (As.), *Hope* : *indicus* (Nil.), *assamensis*, *Stol*.
Passalus, Fabr.—*fronticornis* (Tib.), *West.*

References.

Percheron.—*Monographie des Passalides*, Paris, 1835.

Westwood.—*Mod. Class. Ina.* I. 186, 1839 : *An. Mag. N. H. n. s. VIII.*, 194.

Smith, F.—*Catalogue of Passalids in the British Museum*, 1852.

Lacordaire.—*Spéc. Gén.*, III., 44, 1856.

Kaup.—*Monograph*, Berlin Ent. Zeit., XV., 1871.

Stoliczka.—*On Indian Passalids.* J. A. S. Ben. XLII, ii., 149, 1873.

Family *Melolonthidae*—Cockchafers.

Serica, MacL.—*mutabilis* (Mad.), *Fabr.* : *marmorata*, *umbrina*, *indica*, *iridescens*, *rufocuprea*, *costigera*, *ferrugata*, *brevis*, *granuligera* (Ben.), *Blanch.* : *immutabilis*, *Schön.* : *marginella*, *bimaculata*, *Hope* : *ferruginea* (Kash.), *Redt.*

Apogonia, Kirby—*rauca* (Mad.), *ferruginea* (Ben.), *Fabr.*

Ancylonycha, *Blanch.*—*serrata* (Mad.), *Fabr.*: *sculpticollis*,
puberina, *longipennis*. (Ben.), *Reynaudii*,
Perrottetii, *consanguinea*, *Blanch.*: *mucida*,
Schön.:

Schizonycha, *Erichs.*—*ruficollis* (Mad.) *Fabr.*: *fuscescens*, *xan-*
thodera (Ben), *Blanch.*: *cylindrica*, *Schön.*:
cribricollis (Kash.), *Redt.*

Brahmina, *Blanch.*—*Calva* (Ben.), *comata* (Ben.), *Blanch.*

Anoxia, *Lap.*—*indiana* (N. I.), *Blanch.*

Leucopholis, *Blanch.*—*candida*, *Oliv.*: *lepidophora*, *niveosqua-*
mosa, *Blanch.*

Lepidiota, *Hope*—*bimaculata* (= *Griffithii*, *Hope*), *Saund.*: *punc-*
tatipennis, *sticticoptera*, *rugosipennis*, *luctu-*
osa, *impluviata*, *Blanch.*

Euchirus, *Kirby*—*Mac Leayii* (Nep. As.), *Hope.*: *longimanus*,
Oliv.: *Parryi* (Darj.), *G. Gray.*

References.

Westwood.—*Mod. Class. Ins.* I. 216, 1836. *Cab. Or. Ent.* t. 1.

Lacordaire.—*Spéc. Gén.* III. 169, 1856. *Indian species*; *Blanchard*, *Cat.*
des Col. du Mus. d' Hist. Nat. de Paris. Paris, 1850-51: *Hope*, *An. Mag. N. H.*
n. s. III. 17, 171, VI. 300.

Family *Rutelidae*.

Rhinyptia, *Dej.*—*indica*, *Burm.*

Dinorhina, *Lac.*—*orientis*, *New.*

Anomala, *Köppe*—*fraterna* (var. *pallida*, *Oliv.*), *communis*, *Burm.*:
dorsalis (Mad.), *elata* (Mad.), *Fabr.*: *pallidi-*
collis, *pallida*, *rugipennis*, *bengalensis*, *testa-*
cea, *fulgens*, *striolata*, *ignicollis*, *lineatopen-*
nis, *Duvaucelii*, *elegans*, *fulviventra*, *Blanch.*:
strigata, *Lap.*: *varicolor*, *Schön.*: *ypsilon*,
Wied.

Euchlora, *Mac L.*—*Dussumieri*, *cribrata*, *obsoleta*, *malabarien-*
sis, *xanthoptera*, *Blanch.*: *grandis*, *MacLea-*
yana, *perplexa*, *de Hahnii*, *dimidiata*, *sulcata*,
Cantoni, *aureola*, *Hope*: *vittata* (Kash.),
Redt.

Mimela, Kirby—*Leii*, *Swed.*: *MacLeayana*, *Vigors*: concolor, heterochropus, pectoralis, fulgidivittata, *Blanch*: splendens, auronitens, *Horsfieldii*, chrysoprasis, bicolor, similis, princeps, decipiens, pyroscolis, glabra, *Passerinii* (Him.), xanthorina, *Hope*: sapphirina (As.), *Parry*.

Popillia, *Latr.*—nitida, cyanea [=concolor, *Lap.*; var.=beryllina, *Hope*], minuta, marginicollis, cupricollis [var. formosa, smaragdula, suturata, *Hope*], virescens, *Hope*: reginæ [=splendida, Guér.], nasuta, acuta, rugicollis, mutans, fimbriata, chlorion, *Adamas*, complanata, lucida, difficilis, varia (As.), gemma (As.) *Newman*: sulcata (Kash.), truncata (Kash.), cashmiriensis, *Redt.*

Peperonota, *West.*—*Harringtonii* (Him.), *West.*

Parastasia, *West.*—rufopicta (As.), *West.*

Didrepanephorus, *Wood M.*—bifalcifer (As.), *Wood-M.*

Adoretus, *Lap.*—Boops, *Wied.*: caliginosus, *Burm.*: concolor *Duvaucelii*, latifrons, ovalis, pallens, limbatus, *Blanch*: femoralis, *Duf.*

Heterophthalmus, *Blanch.*—ocularis, *Blanch.*

References.

Westwood.—*Mod. Class. Ina. I.* 213: *An. Mag. N. H. n. s. VII.* 204: *X.* 68: *Cab. Or. Ent. t.* 17.

Lucordaire.—*Spéc. Gén. III.* 318, 1856. *Indian Species; Blanchard, Cat. Col. de Mus. de Paris: Hope, Gray's Zool. Mis. I.* 23: *Trans. Ent. Soc. I.* 108, 114: *An. Mag. N. H. n. s. III.* 17, 171: *IV.* 345: *IX.* 247: *XI.* 62: *XIV.* 454 (*Parry*). *Newman, Ibid, II,* 336, 392: *III.* 345. *Trans. Ent. Soc. III.* 32.

Family *Dynastids.*

Paltonotus, *Burm.*—morio, *Burm.*

Horonotus, *Burm.*—*Dædalus*, (♂ = xanthus, *Oliv.*; ♀ = diadema, *Oliv.*), *Fabr.*

Phyllognathus, *Esch.*—*Dyonisus* (*Mad.*), *Fabr.*

Oryctes, *Ill.*—*Rhinoceros*, *Linn.*

Trichogomphus, *Burm.*—lunicollis, *Burm.*: *Bronchus*, *Herbst.*

Dichodontus, *Burm.*—coronatus, *Burm.*

Eupatorus, *Burm.*—Hardwickei (Nep.), Cantori (As.), *Hope*.

Chalcosoma, *Hope*.—Atlas (Him.), *Lin.*

References.

Westwood.—*Mod. Class. Ina.* I. 191 : *Cab. Or. Ent.* 4. 13.

Leveillé.—*Sptc. Gén.* III. 367, 1856. *Boyes'* figure in *J. A. S. Ben.* XII. 436 is *E. Hardwickei*, *Hope*.

Family *Cetoniidae*—Rose-beetles.

Narycius, *Dup.*—opalus (Mad.), *Dupont*.

Cyphonocephalus, *West.*—amaragdulus, *West*.

Dicronocephalus, *Hope*.—Walliohii (Nep.), *Hope*.

Rhomborhina, *Hope*.—(Jumnos) Ruckeri (Him.), *Saund* : (Jumnos) Boylei (Him.), *Hope* : opalina (Nep.), Mellyi [=dives, *West*], (Nep.), *G. et P.* : hyacinthina (As.), *Hope* : apicalis [=distincta, *Hope*], (Nep.) ; microcephala (Him.), *West*.

Heterorhina, *West*.—A (Trigonophorus, *Hope*)—Delessertii (Him.), *Guér.* : gracilipes (Him.), *Saundersii* (Him.), *West* : Hardwickei [=nepalensis, *West*], (Him.), *Hope*.

B (Anomalocera, *Hope*)—Parryi [♂ = Mearseii, *Hope*] (Him.), *Hope* : glaberrima [=hirtiventris, *Redt.*], (Him.), *West*.

C (Coryphocera, *Burm.*)—Hopei [♀ = bengalensis, *West.*; affinis, *Redt.* and ♂ = Hopei, melanaria, dorsalis *G. et P.*], (Nep.), *West.* : elegans [anthracina, *West.* : micans, *Guér.* : cuprea, *Herbst* : Feisthamelii, *G. et P.*] (Mad.), læta (As.) *Fabr.* : nigritarsis (Nep.), amæna (As.), Cuvera (Bom.), *Hope* : olivacea, *Guér.* : sinuaticollis, *Schaum* : bimacula [=confusa, *West*] (Ben.), *Wied.* : punctatissima [jucunda, *Hope*], (As.) ; tibialis (N. I.), Childrenii (Ben.), *West.* ; coxalis (Nep.), *Blanch.*

D (Dicerus, *G. et P.*)—bicornis (As.), *Latr.* : ornata (Mad.), *Burm.*

E (Mystroceros, *Burm.*)—dives, *West*.

- Clinteria**, *Burm.*—guttifera, hilaris (N. I.), spuria, *Burm.*: confinis (N. I.), flavonotata, *G. et P.*: modesta (Ben.), flavopicta (Ben.), *Blanch.*: Hearsiana (Ben.), *West.*: Klugii (N. I.), spilota (N. I.), *Hope*: ducalis (As.): Hoffmeisteri (N. I.), *White*: punila (Ben.), *Schön.*: cœrulea, *Herbst.*
- Agestrata**, *Esch.*—chinensis [♂ = Withillii (Bom.), and ♀ = Gages (Mad), *Hope*], *Fabr.*
- Macronota**, *Wied.*—dives [penicillata, *Hope*; Mearesii, Parry], (Mad., N. I.); flavomaculata (Mad.); malabariensis (Mad.); elongata (Cal.), resplendens (Ben.), *G. et P.*: vittigera (Mad.), tetraspilota (Mad. Puna), stictica (Mys.), *Hope*: alboguttata (N. I.), *Parry*: picta, *Guér.*: 5-lineata, *Hoff.*
- Bombodes**, *West.*—ursus (Him.), *West.*
- Euryomia**, *Burm.*—viridiobscura (N. I.), Bealiæ (Ben.), *G. et P.*: tricolor, *Oliv.*: versicolor (N. I.); albopunctata, *Fabr.*: marginicollis [= Horsfieldii, *Hope*; torquata, *Fabr.*] (Nep. As.), *Gory*: bivittata (Tib.), *Burm.*: Gravenhorstii, *Hope*: aurulenta, *White.*
- Anoplochilus**, *Mac L.*—castanopterus (Bom.) *Burm.*: terrasus, *G. et P.*: brunneocupreus, cœnosus, argentiferus, *West.*
- Anatona**, *Burm.*—flavoguttata [stillata, *New.*] (Him. Bom.); alboguttata (Dec.) *Burm.*
- Chiloloba**, *Burm.*—acuta (Ben.), *Wied.*
- Cetonia**, *Fabr.*—Dalmani (Nep.); ignipes (Nep.); regalis (Bom.); squamipennis; *Burm.*: difformis (Ben.); maculata (N. I.), mixta (Ben.), *Fabr.*: cupripes, *Wied.*: alboguttata [Saundersii, *Bain.*] (In.), *Vigors*: flavoguttata (Kash.), *Redt.*: neglecta (Nep.), *Hope.*
- Anthracophora**, *Burm.*—atromaculata, *Fabr.*: Bohemania, *West.*: gracilis (Mad.), *White.*

Macroma, *G. et P.*—*melanopus* [*nigripennis*, *Hope*], (As.),
Schaum: *xanthorhina* [*bicolor*, *G. et P.*],
(Nep.), *Hope*.

Centrognathus, *Guér.*—*lugubris*, *Fabr.*

Spilophorus, *Schaum.*—*maculatus* [*cretosus*, *Hope*], (Puna),
Gory.

Cænochilus, *Schaum.*—*platyrhinus*, *Sch.*: *Campbellii* (N. I.),
brunneus (N. I.), *Saund.*: *glabratus*, *West*.

Valgus, *Scriba.*—*pygmæus*, *G. et P.*: *pictus* (Nep.), *argillaceus*
(Mad.), *Hope*: *podicalis*, *penicillatus*, *Blanch.*

References.

Westwood.—*Mod. Class. Ins.* I. 221: *Arc. Ent.* I. 5, 113, 129 and t. 1, 19,
26-36, 42-46. *Cab. Or. Ent.* t. 17. *Trans. Ent. Soc.* IV.

White.—*Cetoniads of the British Museum*, 1847.

Schaum.—*Cat. des Lamellicornes Méliothilles.* *An. Soc. Ent.* III., 37.

Lacordaire.—*Spéc. Gén.* III. 464, 1856. *Indian species, Hope.* *An. Mag.*
N. H.: n. s. VI. 482: VIII. 302. *Saunders, Ibid.*, X. 67.

H.—SERRICORNES.

Family *Buprestidae*—Metallic-beetles.

Sternocera, *Esch.*—*sternicornis*, *chrysis* (Mad. Cal.), *Linn.*: *ba-*
salis chrysidoides (Mad.), *nitidicollis*, *rugosi-*
pennis, *Diardi*, *dissimilis*, *Lap. et G.*: *uni-*
color (Mad.), *Lap.*: *orientalis*, *Herbst*: *lævi-*
gata, *Oliv.*: *dasypleuros* (Kash.), *Redt.*

Julodis, *Esch.*—*Whithillii*, *Hope*.

Catoxantha, *Sol.*—*bicolor* (As.), *Fabr.*: *giganteus* (Mad.), *Sch.*:
cuprascens, (Mad.), *Water*.

Chrysochroa, *Sol.*—*ignita*, *Linn.*: *ocellata*, *Fabr.*: *mutabilis*,
Oliv.: *Edwardsii* (As.), *Plutus*, *Hope*: *assa-*
mensis, *Guér.*: *caroli* (Mad.), *Perr.*: *Rajah*
(Bom.), *chinensis* (As.), *pectinicornis* (Mad.),
Lap. et G.: *bivittata* (As.) *Gray*: *sublimata*
(N. I.), *White*.

Chalcophora, *Sol.*—*elegans*, *Fabr.*: *Blanchardi* (Bom.), *eximia*,
sumptuosa, *Sonneratii*, *smaragdula*, *aurifera*,
Lep. et G.

Elater, *Linn.*—*cyanopterus* (Garhwál), *Hope*.

Cardiophorus, *Esch.*—*vicinus* (Kash.), *consentaneus* (Kash., *Redt.*

Penia, *Lap.*—*Eschscholtzii* (Nep.), *Hope*.

Corymbites, *Latr.*—*fuscipennis* (Ben.), *Blanch.*: *viridis*, *Germ.*

Plectrosternus, *Lac.*—*rufus*, *Latr.*

References.

Westwood.—*Mod. Class. Ins.* I. 225: *Cab. Or. Ent.* t. 35.

Lacordaire.—*Spéc. Gén.* IV. 130, 1857. *Cand. Mon. Elateridæ.* 1859, *Hope*: *An. Mag. N. H. n. s.* VIII. 453: XI. 394; XIV. 454.

Family *Lycidæ.*

Macrolycus, *Waterh.*—*Bowringü* (All.), *Waterhouse.*

Calochromus, *Gutrin.*—*orbatus* (As.), *rugatus* (All.), *ruber* (All.), *tarsalis* (In.), *Waterh.*: *apicalis* (Nep.), *Hope.*

Lycostomus, *Motsch.*—*similis* (In.), *Hope*: *modestus* (As.), *ambiguus* (As.), *singularis* (Mad.), *striatus* (In.), *thoracicus* (In.), *Waterh.*: *analisis* (In.), *Dalm.*

Plateros, *Bourg.*—*fuscipennis* (As.), *carbonarius* (In.), *Waterh.*

Xylobanus, *Waterh.*—*foveatus* (In.), *Waterh.*

Metriorrhynchus, *Guér.*—*sericans* (In.), *Waterh.*: *lineatus* (N.I.), *Hope.*

Conderis, *Waterh.*—*major* (N. I.), *Waterh.*

References.

Waterhouse.—*Types of Coleoptera British Museum*, 1879.

Murray.—*An. Mag. N. H.* 1868, 327.

Family *Malacodermidæ.*

Lyropæus, *Water.*—*biguttatus* (Mal.), *Water.*

Ditoneces, *Walk.*—*obscurus* (Mal.), *Water.*

Lamprigera, *Motsch.*—*nepalensis* (Ben.), *Hope.*

Lampyrus, *Geoff.*—*marginella* (Ben.), *Hope.*

Luciola, *Lap.*—*vittata*, *Lap.*

Tylocerus, *Dalm.*—*bimaculatus* (Mus.), *Hope.*

Telephorus, *Schaff.*—*melanocephala* (Ben.), *Fabr.*: *nepalensis*, *Hope*: *cœruleomaculata* (Kash.), *Redt.*

- Selasia, *Lap.*—*decipiens* (Ben.), *Guér.*
 Eugensis, *West.*—*palpator* (Cal.), *West.*
 Dodecatoma, *West.*—*bicolor* (Deo.), *West.*
 Agalochrus, *Erichs.*—*lætus* (Ben.), *Fabr.*
 Carphurus, *Erichs.*—*transparipennis*, *nigripennis*, *Motsch.*
 Prionocerus, *Perty.*—*cœruleipennis*, *Perty.*

References.

Westwood.—Mod. Class. Ins. I. 242, 1839: Cab. Or. Ent. t. 41.

Lacordaire.—Spéc. Gén. IV. 285, 1857.

Family *Ptinidæ*.

- Ptinus*, *Linn.*—*nigerimus*, *Boëld.*

Reference.

Lacordaire.—Spéc. Gén. IV. 508, 1857.

Family *Cleridæ*.

- Cylidrus*, *Latr.*—*cyaneus* (Cen. In., Ben.), *Fabr.*
Cladiscus, *Chevrol.*—*Parrianus*, *bipectinatus*, *West.*: *Prinseprii*
 (N. I.), *gracilis* (N. I.), *longipennis* (N. I.),
White.
Tillus, *Fabr.*—*succinctus*, *Dup.*: *picipennis*, *West.*: *notatus*,
Klug.
Opilus, *Latr.*—*subfasciatus* (Ben.), *castaneipennis* (Ben.), *uni-*
color, *White.*
Tillicera, *Spin.*—*mutillæcolor* (N. I.), *White.*
Thanasimus, *Latr.*—*abdominalis*, *Spinola*: *stellatus*, *subscutella-*
ris, *West.*
Clerus, *Geoff.*—*bengala*, *posticalis*, *zebratus*, *West.*
Thaneroclerus, *Spin.*—*Buquetii*, *Lefebvre.*
Stigmatium, *Gray.*—*rufiventre* (As.), *West.*
Tenerus, *Lap.*—*signaticollis* (Cen. In.), *Lap.*
Necrobia, *Latr.*—*rufipes*, *Oliv.*: *ruficollis*, *violacea*, *Latr.*
Opetiopalpus, *Spin.*—*obesus* (N. I.), *White.*

References.

Westwood.—Mod. Class. Ins. I. 261, 1839.

Spinola.—Essai sur les Clérides. Geneva, 1844.

White, A.—List of the Clerids in the British Museum, 1849.

Lacordaire.—Spéc. Gén., IV., 415, 1857.

II.—HETEROMERA.

A.—TRACHELIA.

Family *Lagriidæ*.

Lagria, *Fabr.*—*ærea* (Kash.), *variabilis* (Kash.), *bicolor* (Kash.), *Redt.*

Family *Pedilidæ*.

Macratria, *New.*—*Helferi*, *concolor*, *nigella* (Ben.), *De la Ferte*.

Family *Anthicidæ*.

Formicomus, *De la Ferte*—*consul*, *prætor*, *De la F.*: *bengalensis*, *Wied.*: *ruficollis*, *Sæund.*

Leptaleus, *De la Ferte*—*delicatulus*, *De la F.*

Mecynotarsus, *De la Ferte*—*nanus* (Ben.), *nigrozonatus*, *fragilis*, *De la F.*

Oethenomus, *Schm.*—*indicus*, *De la F.*

Family *Pyrochroidæ*.

Pyrochroa, *Geoff.*—*longa*, *Perty*.

Family *Mordellidæ*.

Mordella, *Linn.*—*tricolor*, *Wied.*

Family *Rhipiphoridaæ*.

Emenadia, *Lap.*—*bipunctatus* [= *apicalis*, *Hope*] (*Garhwâl*); *pusillus*, *Fabr.*

Family *Meloidæ*—Oil-beetles.

Mylabris, *Fabr.*—*Jacquemontii* (Kash.), *Redt.*: *pustulata*, *puncta* (Mad.) *Collas*: *indica*, *Fuss.*: *humeralis*, *proxima*, *orientalis*, *Dej.* *cichorii* (In.), *Fabr.*

Cantharis, *Geoff.*—*cærulea* (Ben.), *Leuck.*: *ruficollis*, *testacea*, *Fabr.*: *ruficeps*, *Ill.*: *rubriceps* (Kash.), *limbata* (Kash.), *Redt.*: *Actæon*, *Rouxii*, *ornata*, *picta*, *Lap.*: *nipalensis*, *assamensis*, *violacea*, *gigas*, *Dej.*

Sybaris, *Steph.*—*præustus* (Kash.), *tunicatus* (Kash.), *semivittatus* (Kash.), *Redt.*

Zonitis, *Fabr.*—*pallida*, *Fabr.*

Onyctemis, *Lap.*—*Sonneratii*, *Lap.*

References.

- Westwood*.—Mod. Class. Ins, I, 286-308, 1839.
Lacordaire.—Spéc. Gén. V., 563-648, 1859.
Gerstaecker.—Mon. Rhipiphoridum. Berlin, 1855.
Newport.—Trans. Linn. Soc., XX., 297, 321.

B—A T R A C H E L I A.

Family *Tenebrionida*.

- Microdera*, *Esch.*—coromandelensis (Mad.), *Solier*.
Hyperops, *Esch.*—unicolor (Ben.), *Herbst*: indicus, striatopunctatus, *Wied.*: coromandelensis (Mad.), *Solier*.
Stenosida, *Solier*—tenuicollis, *Solier*.
Himatismus, *Erichs.*—fasciculatus, *Fabr.*
Blaps, *Fabr.*—orientalis (Ben.), spathulata (Ben.), punctatostriata (Ben.), *Solier*.
Platynotus, *Fabr.*—striata (Mad.) excavata (Mad.) *Fabr.*: punctatipennis, *Deyrollei*, perforatus, *Muls.*
Pseudoblaps, *Guér.*—crenatus (Mad.) nigratus, *Fabr.*: *Melii*, ambiguus, parallelus, strigipennis, polinieri (Mad.), *Muls.*: javanus, *Wied.*: arcuatus, *St. Fary.*: Westermanni, *Mann.*
Scleron, *Hope*—latipes, *Guér.*
Opatrum, *Fabr.*—elongatum, *Guér.*
Bolitophagus, *Ill.*—elongatus, *Perty.*
Hemicera, *Lap.*—splendens, *Wied.*
Uloma, *Meg.*—orientalis, *Lap.*
Latheticus, *Water.*—oryzæ (Cal.), *Water.*
Toxicum, *Latr.*—quadricornis, *Fabr.*: *Richesianum*, *Latr.*
Cossyphus, *Oliv.*—depressus, *Oliv.*: *Edwardsii*, *Lac.*
Polposipus, *Sol.*—herculeanus (Ben.), *Sol.*
Lyprops, *Hope*—chrysophthalmus (Ben.), *Hope*: indicus (Ben.), *Wied.*
Scotæus, *Hope*—splendens (As.), *Dej.*
Strongylium, *Kirby*—rufipenne (Kash.), *Redt.*
Phymatosoma, *Lap.*—tuberculatum (Ben.), *Lap.*
Cyriogeton, *Pascoe*—insignis (As.), *Pascoe.*

References.

Westwood.—Mod. Class. Ins., I., 316, 1839.

Lacordaire.—Spéc. Gén., V., 1., 1859.

Pascoe.—An. Mag. N. H., 4th Ser., Vols. 3, 8-13.

Family *Cistelidæ*.

Allecula, Fabr.—fusiformis, elegans, *Walker*.

Reference s.

Westwood.—Mod. Class. Ins., I., 309, 1839.

Lacordaire.—Spéc. Gén., V., 490, 1859.

III.—PSEUDO-TETRAMERA.

A.—RHYNCOPHORA.

Family *Brenthidæ*.

Prophthalmus, Pascoe. sanguinalis, *Pascoe*.

Family *Curculionidæ*—Weevils.

Blosyrus, Scho.—oniscus, asellus, *Oliv.*: *Herthus, Herbst.*: inæqualis, *Guér.*: variegatus (Kash.), costatus (Kash.), *Redt.*: spongifer, *Scho*.

Cneorhinus, Scho.—pictus (Kash.), lituratus, obscurus (Kash.), *Redt.*

Catapionus, Scho.—basilicus (N. I.), *Scho*.

Atmetonychus, Scho.—peregrinus (Ben.): inæqualis (Ben.), *Scho*.

Piazomias, Scho.—acutipennis (Nil.); *Perottetii* (Nil.); prasinus (Nil.); himalayanus, assamensis, *Sch.*: globulicollis (Kash.); angustatus (Kash.), *Redt.*

Astycus, Scho.—chrysochlorus, *Wied.*: lateralis, *Fabr*.

Polyclæis, Scho.—parcus (Ben.), *Sch*.

Hypomeces, Scho.—rusticus, sparsus, curtus, *Sch.*: pollinosus (Kash.), *Redt.*

Dereodus, Scho.—denticollis, *Sch*.

Cratopus, Scho.—marmoreus, *Sch*.

Achlainomus, Water.—ebeninus, *Water*.

Episomus, Scho.—indicus, *Sch*.

Omius, Scho.—crinitus (Kash.), *Redt.*

Phyllobius, Germ.—jucundus (Kash.), *Redt.*

Macrocorynus, Scho.—discoideus, *Oliv*.

Drepanoderes, Water.—viridifasciatus (N. I.), fuscus (N. I.), *Water*.

- Arhines*, *Scho.*—*languidus* (Ben.), *Scho.*
Cyphicerus, *Scho.*—*9-lineatus* (Ben.) : *passerinus* (Ben.), *Oliv.*
Platytrachelus, *Scho.*—*pistacinus* (Ben.), *Sch.*
Amblyrhinus, *Scho.*—*poricollis*, *Sch.*
Acanthotrachelus, *Scho.*—*ventricosus* (Nil.), *Sch.*
Phytoscaphus, *Scho.*—*nepalensis*, *inductus*, *chloroticus*, *lixabundus*, *Sch.*
Lixus, *Fabr.*—*octoguttatus* (Kash.); *fasciatus* (Kash.), *Redt.*
Peribleptus, *Scho.*—*sculptus* (Him.), *Sch.*
Paramecops, *Scho.*—*farinosus*, (Ben.), *Wied.*
Cylas, *Latr.*—*fermicarius*, *Fabr.* : *turcipennis*, *lævicollis*, *Sch.*
Apion, *Herbst.*—*inflatum*, *crassicolle*, *triangulicolle*, *gagatinum*, *subcostatum*, *dilaticolle*, *chalybeicolor*, *pruinoseum*, *indicum*, *amplipenna*, *restricticollis*, *flavimanum*, *tuberculiferum*, *alboirroratum*, *Motsch.*
Apoderus, *Oliv.*—*cygneus*, *Fabr.* : *longicollis*, *Oliv.* : *flavotuberosus*, *montanus* (As.), *crenatus*, *pallidulus*, *bistrimaculatus*, *bihumeratus*, *Jekel* : *tranquebaricus*, *melanopterus*, *Westermanii*, *quadrupunctatus*, *assamensis*, *unicolor*, *gemmatus*, *Sch.*
Attelabus, *Linn.*—*octomaculatus* (Mad.), *Jekel* : *melanurus*, *bispinosus*, *discolor*, *Sch.*
Euops, *Sch.*—*Bowringii*, *Jekel.*
Trachelelabus, *Jekel.*—*Whitei*, *Jekel.*
Rhynchites, *Herbst.*—*alcyoneus*, *sculpturatus*, *Pascoe.*
Dicranognathus, *Redt.*—*nebulosus* (Kash.), *Redt.*

References.

Westwood.—*Mod. Class.* I. 324, 328, 1839.

Lacordaire.—*Spéc. Gén.*, VI., 1863.

Schönherr.—*Genera et species Curculionidum.* Paris, 1833-45. This appeared in eight volumes and contains 7,147 species: there is a supplement to the last volume, and a second supplement was published at Stockholm in 1847 and illustrations by Imhoff and Labram of part at Basle, 1848-52.

Pascoe.—*Descriptions of new species, chiefly Australian.* *Ann. Mag. N. H.* 4th Ser., Vols. 7 to 20 : *J. Linn. Soc.* X. 434 ; XI. 154, 440 ; XII.

Family *Trictenotomidae*.

Autoerates, *Thoms.*—*ænea* (Him.), *Parry*.

Trictenotema, *Gray*—*Childreni* (Him.), *West.*: *Grayii* (Mad.), *Smith*.

References.

Westwood.—*Cab. Or. Ent.* t. 23.

Lacordaire.—*Spéc. Gén.*, VIII., 1. 1869.

B.—LONGICORNES.

Family *Prionidae*.

Cantharocnemis, *Serv.*—*Downesii* (Ben.), *Pascoe*.

Cyrtognathus, *Fald.*—*indicus* (Var. *Hugelii*, *Redt.*), (As. Him. Kash.), *Hope*: *Walkerii* (N. I.), *Water.*: *granulosus*, *Thoms*.

Dorysthenes, *Vigors.*—*rostratus*, *Fabr.*: *montanus*, *Guér.*

Dissosternus, *Hope*—*Pertii* (Dec.), *Hope*.

Ancylotropus, *White*—*bigibbosus* (As.), *White*.

Prionomma, *White*—*orientalis* (Mad.), *Oliv.*

Prietyrranus, *Thoms.*—*mordax* (N. I.), *White*.

Logæus, *Water*—*subopacus* (Mad.), *Waterhouse*.

Acanthophorus, *Serv.*—*serraticornis*, *Oliv.*

Opheltes, *Thoms.*—*obesus*, *Thomson*.

Baralipton, *Thoms.*—*maculosum* (Cal.), *Thoms*.

Ægosoma, *Serv.*—*ornaticolle*, *tibiale* (N. I.), *White*: *lacertosum* (As.), *Pascoe*.

Megopis, *Serv.*—*costipennis* (As.), *White*.

Teledapus, *Pascoe*—*dorcadiodes* (Mus.), *Pascoe*.

Philus, *Saund.*—*globosicollis*, *Thoms*.

Cyrtonops, *White*—*punctipennis*, *White*.

Tragosoma, *Serv.*—*subcoriaceum* (N. I.), *Hope*.

References.

Westwood.—*Mod. Class., Ins.*, I., 359.

White.—*Cat. Col. Ins.*, British Museum, Pt. VII., 1853.

Lacordaire.—*Spéc. Gén.*, VIII., 16, 1869.

Thomson.—*Essai d'une classification de la famille des Cérambycides*. Paris, 1860.

Family *Cerambycidae*.

- Dynamostes*, *Pascoe*—*audax*, *Pascoe*.
Tetraommatus, *Perroud*—*filiformis* (Mad.), *Per*.
Oplatocera, *White*—*callidioides* (N. I.), *White*.
Neocerambyx, *Thoms.*—*Paris* (= *Brama*, *New.*) (Ben.), *Wied*.
Plocaderus, *Thoms.*—*pedestris* (N. I.), *humeralis* (N. I.), ?
White: *obesus*, *Dup*.
Pachydissus, *New.*—*demissus* (N. I.), *Pascoe*.
Hesperophanes, *Muls.*—*basalis* (Him.), *White*.
Nymphasia, *Pascoe*—*orientalis* (As.), *White*.
Ceresium, *New.*—*geniculatum*, *leucostictum*, *cretatum*, *White*.
Phyodexia, *Pascoe*—*concinna* (Mus.), *Pascoe*.
Pyrocalymma, *Thoms.*—*pyrochroides* (N. I.), *Thoms*.
Pachylocerus, *Hope*—*corallinus*, *Hope*: *crassicornis*, *Oliv.*: *pilosus*, *Bug.*: *plumiferus*, *Pascoe*.
Pyresthes, *Pascoe*—*miniatus* (N. I.), *Pascoe*.
Erythrus, *White*—*bicolor* (N. I.), *West*: *Westwoodii* (Him.), *White*.
Coloborhon bus, *Thoms.*—*velutinus* (As.), *Saund*.
Zonopterus, *Hope.*—*flavitaris* (As.), *Hope*.
Pachyteria, *Serv.*—*fasciata* (As.) *Fabr.*: *rubripennis* (As.), *Hope*: *dimidiata* (As.), *West*.
Aphrodisium, *Thoms.*—*Cantori* (As.), *Griffithii* (As.), *Hope*: *Hardwickeanum* (Nep.), *White*.
Mecaspis, *Thoms.*—*aurata*, *chalybeata*, *Thoms*.
Chloridolum, *Thoms.*—*perlætum* (As.), *bivittatum*, *Nympha* (N. I.), *White*.
Leontium, *Thoms.*—*viride*, *cæruleipenne*, *thalassium*, *Thoms.*: *prasinum* (Mad.), *White*.
Polyzonus, *Lap.*—*cinctus* (N. I.), *Guér.*: *tetraspilatus* (As.), *Hope*: *inermis*, *4-maculatus* (Mad.), *White*.
Eurybatus, *Dej.*: *10*—*punctatus* (As.), *West.*: *lateritius* (N. I.), *Hope*: *hariolus* (As.), *Dej.*: *formosus*, *Saund*.

- Clytanthus*, *Thoms.*—*lituratus* (Ben.), *Lap.*: *albicinctus* (Nep.),
Hope: *maculicollis*, *Dalm.*: *14-maculatus*
 (Nil.), *mæstus* (Mad.), *alboscuteclatus* (Nil.),
nepos, *agnatus* (Nil.), *cognatus* (As.), *Chevrol.*
- Psilomerus*, *Chevrol.*—*angustus* (*gracilicornis*, *White*), *Chevrol.*
- Grammographus*, *Chevrol.*—*lineatus*, *Chevrol.*
- Ischnodora*, *Chevrol.*—*macra*, *Chevrol.*
- Rhaphuma*, *Pascoe.*—*glaucia* (Mad.), *Fabr.*: *Wiedemanni*, *leu-*
costellata, *Hope*: *distinguenda*, *Per.*: *fallax*,
5-notata, *6-notata*, *dimidiata*, *geniculata*,
russicollis, *3-maculata*, *Chevrol.*
- Amauresthes*, *Chevrol.*—*fuliginosus* (Tib.), *subdepressus* (As.),
arciferus, *Chevrol.*
- Xylotrechus*, *Chevrol.*—*Smeei*, *vicinus* (Dec.), *ocellatus*, *Lap.*:
subditus, *quadripes* (Kash.), *aper* (Nil.),
Chevrol.
- Sclethrus*, *New.*—*amænus* (Mad.), *Gory.*
- Plagithyrus*, *Motsch.*—*sumatrensis* (Ben.), *brahminus* (Ben.),
bicinctus (N. I.), *assimilis* (Nep.), *Hope*:
Balyi, *Pascoe.*
- Epodus*, *Chevrol.*—*humerosus*, *Chevrol.*
- Aglaophis*, *Thoms.*—*fasciata*, *Thoms.*
- Cyrtophorus*, *Le Conte*—*ventralis* (Nil.), *Chevrol.*
- Epipedocera*, *Chevrol.*—*Hardwickei* (*undulatus*, *Hope*), *White*:
zona (Nep.), *affinis* (Nil.), *Chevrol.*
- Purpuricenus*, *Zieg.*—*montanus* (Him.), *White*: *sanguinolentus*,
Oliv.
- Typodryas*, *Thoms.*—*callichromoides* (As.), *Thoms.*
- Noemia*, *Pascoe*—*Stevensii*, *flavicornis*, *Pascoe.*
- Eurycephalus*, *Dej.*—*maxillosus*, *Oliv.*

References.

- Westwood.*—*Mod. Class. Ins.*, I., 362. *Cab. Or. Ent.* t. 29.
- White.*—*Cat. Col. British Museum*, Pt. VII., 1853.
- Schizda.*—On the classification of the Ceraurbyces. *An. Mag. N. H.*, 3rd Ser., XV., 183.
- Pascoe.*—*Longicornia Malayana*. *Trans. Ent. Soc.*, 3rd Ser., III.
- Lacordaire.*—*Spéc. Gén.*, VIII., 200: IX., 1849.

Family *Lamiidæ*.

- Acanodes*, *Pascoe*—*montanus* (Darj.), *Pascoe*.
Dioxippe, *Thoms.*—*costata* (Nfl.), *Guérin*.
Morimopsis, *Thoms.*—*lacrymans*, *Thoms.*
Epicedia, *Thoms.*—*bigeminata*, *Thoms.*
Archidice, *Thoms.*—*quadrinotata*, *Thoms.*
Leprodera, *Thoms.*—*offinator*, *Lac.*
Morimus, *White*—*inæqualis* (Mad.), *plagiatus* (Mad.), *Water*:
morionoides, *White*.
Euoplia, *Hope*—*polyspila* (As.), *Swainsoni* (As.), *Hope*.
Anoplophora, *Hope*—*Stanleyi* (As.), *Hope*.
Merges, *Pascoe*—*marmoratus* (Him.), *Melley*.
Epepeotes, *Pascoe*—*punctulatus* (Him.), *West.*: *lusca*, *Fabr.*
Monochamus, *Meger.*—*Downesii* (N. I.), *Parryi*, *Roylii* (Mus.),
sulphurifer (As.), *beryllinus* (As.), *Hope*: *He-*
lenor, *New.*: *guttatus* (Him.), *Guér.*: *West-*
woodii (Him.), *Melley*: *bifasciatus* (Him.),
West.: *larvatus*, *Stephanus*, *melanostictus*
(N. I.), *Fredericus* (As.), *offinator* (As.),
sublineatus (As.), *Brianus* (Nep.), *White*:
subgemmatus (As.), *desperatus*, *griseipennis*,
Pascoe.
Myagrus, *Pascoe*—*Hynesii* (Bom.), *Pascoe*.
Echinoschema, *Thoms.*—*armatus* (As.), *White*.
Mecotagus, *Pascoe*—*tigrinus*, *Oliv.*: *Guerinii* (As.), *White*: *tes-*
sellatus (As.), *Guér.*
Cyriocrates, *Thoms.*—*Horsfieldii* (As.), *White*.
Aristobia, *Thoms.*—*reticulator*, *Fabr.*: *fasciculata* (Kash.),
Redt.
Celostena, *Thoms.*—*javana*, *plagiata*, *tessellata*, *White*.
Peribasis, *Thoms.*—*larvatus* (As.), *White*.
Cycas, *Pascoe*—*subgemmatus* (As.), *Thoms.*
Pharsatia, *Thoms.*—*gibbifer* (Nfl.), *Guer.*
Batocera, *Lap.*—*Roylii* [= *princeps*, *Redt.*], (Kash.), *Hope*:
chevrolatii, *adelpa*, *Chlorinda*, *Titana*,
Thoms.

Apriona, *Chevrol.*—Germari (As.), *Hope*: Deyrollei (As.)
Kaup.

Orsidis, *Pascoe*—acanthocimoides, *Pascoe.*

Callophora, *Thoms*—Solii (As.), *Hope.*

Gnoma, *Fabr.*—casnonoides, *Thoms.*

Agelasta, *New.*—bifasciana (As.), *White.*

Coptops, *Serv.*—leucostictica (As.), *White*: centurio, *Pascoe.*

Mispila, *Thoms.*—curvilinea, *Pascoe.*

Thysia, *Thoms.*—Wallichii (Him.), *Hope.*

Calothyrsa, *Thoms.*—margaritifera (Him.), *West.*

Ithocritus, *Lac.*—ruber (As.), *Hope.*

Rhodopis, *Thoms.*—pubera (As.), *Thoms.*

Olenocamptus, *Chevrol.*—dominus (As.), *Thoms.*

Mæchotypa, *Thoms.*—thoracica (As.), *White.*

Elara, *Thoms.*—plagiata (As.), parallela (N. I.), delicatula (As.),
cylindraca (As.), *White.*

Saperda, *Fabr.*—bicolor (As.), *West.*

Camptocnema, *Thoms.*—lateralis (As.), *White.*

Lychrosis, *Pascoe.*—zebrina (As.), *Pascoe.*

Anaches, *Pascoe*—dorsalis, *Pascoe.*

Xynenon, *Pascoe*—Bondii, *Pascoe.*

Prionetopsis, *Thoms.*—balteata, *Thoms.*

Smermus, *Lac.*—Mniszechii, *Lac.*

Thermistis, *Pascoe.*—croceocincta, *Saund.*

Mallderma, *Lac.*—Pascoei, *Lac.*

Glenea, *New.*—rubricollis (As.), *Hope*: sanctæ-mariæ, indiana,
funerula, capriciosa, obsoletipunctata, obesa
(As.), argus, annulata (Him.), chalybeata
(As.), maculifera (As.), pulchella (As.),
spilota, Diana (As.), Peria, Conidia (Bom.);
Thoms.

Stibara, *Hope*—nigricornis, morbillosa, *Fabr.*: tetraspilota (As.),
trilineata (As.), *Hope.*

Nupsarha, *Thoms.*—cosmopolita, bicolor, *Thoms.*

Astathes, *New.*—violaceipennis (N. I.), *Thoms.*: divisa, *Pascoe.*

References.

- Westwood*.—Mod. Class. Ins., I., 368. Cab. Or. Ent. t. 5, 29.
Lacordaire.—Spéc. Gén., IX., 238. 1839-72.
Thomson.—Systema Cerambycidae. Mem. Soc. Sc. de Liège, XIX. 1864.
Pascos.—Longicornia Malayana, Trans. Ent. Soc., 3rd Ser., III.: An. Mag. N. H., 4th Ser., IV., 203: XV., 203.
White.—An. Mag. N. H., 3rd Ser., II., 266: Progs. Zool. Soc., 1858, 398, 406.
Hope.—An. Mag. N. H., N. S., VI., 300: IX., 248: XIV., 454. Trans. Linn. Soc., XVIII., 435.

C.—PHYTOPHAGÆ.

Family *Sagridæ*.

- Sagra*, *Fabr.*—carbunculus (As.), *Hope*.
Temnaspis, *Lac.*—speciosus (N. I.), *Downesii* (N. I.), quinques-
 maculatus (N. I.), nigriceps (Nep.), *Baly*.

Family *Crioceridæ*.

- Lema*, *Fabr.*—*Downesii* (Bom., Ben.), suturella (Ben.), *Psycho*
 (N. I.), glabricollis, *Baly*.

References.

- Westwood*.—Mod. Class. Ins., I., 370.

Family *Hispidæ*.

- Callispa*, *Baly*—insignis (N. I.), dimidiatipennis (N. I.), vittata,
Baly.
Amblistpa, *Baly*—lævigata (Mad., N. I.), *Baly*.
Botryonopa, *Blanch.*—sanguinea (N. I.), *Guér.*: *Sheppardi* (N. I.),
Baly.
Estigmene, *Hope*—chinensis (Nep., N. I.), *Hope*: cribricollis
 (Mad.) *Water*.
Anisodera, *Chevrol.*—ferruginea (N. I.), *Guér.*: excavata (N. I.),
Baly: cylindrica (Nep., N. I.), *Hope*.
Downesia, *Baly*—insignis (N. I.), *Baly*.
Javeta, *Baly*—pallida (Mad.), *Baly*.
Gonophora, *Chevrol.*—*Saundersii* (As.), *Baly*.
Hispa, *Linn.*—erinacea (Nep.), *Fabr.*

Reference.

- Baly*.—Catalogue of Hispidæ in the British Museum, 1852.

Family *Classididae*—Tortoise-beetles.

Calopepla, *Boh.*—*Leayana* (Ben.), *Boh.*: *Reicheana*, *Guér.*

Epistictia, *Boh.*—*selecta* (Bom.); *viridimaculata* (Nep.),
Boh.

Hoplionota, *Hope*—*maculipennis*, *horrifica*, *ochroleuca*, *Boh.*

Prioptera, *Hope*—*Westermanni* (As.), *Mann.*: *impustulata* (As.),
sexmaculata (As.), *maculipeunis* (As.), *decemstillata*, *decemmaculata* (Him.), *pallidicornis*, *decemsignata* (As.), *Boh.*

Aspidomorpha, *Hope*—*miliaris* (Mad.), *St. Crucis* (As.), *dorsata*,
micans, *Fabr.*: *amabilis*, *Dej.*: *orientalis*, *innocua* (Mad.): *fuscocincta*: *lobata* (N. I.);
calligera (Ben.); *Egena* (Ben.); *indica* (Almora); *Boh.*

Cassida, *Linn.*—*clathrata*, *obscura*, *cruenta*, *Fabr.*: *livida*, *dispar*,
testacea, *tricolor*, *Herbst.*: *foveolata*, *16-maculata*, *nigrovittata* (Cal.): *Moori*,
Syratica, *rugulosa*, *icterica* (Almora), *obtusata*, *conspurcata* (Mad.),
pallida (Mad.), *pauvilla*, *exilis* (Mad.), *Delessertii*, *dorsocincta*,
nigriventris (Tib.), *pubibunda*, *glabella* (Nil.), *pulvinata* (Mad.),
costata (Mad.), *fuscosparsa* (As.), *Boh.*: *trilineata* (Nep.), *Hope.*

Leucoptera, *Boh.*—*14-notata*, *26-notata* (As.), *19-notata* (As.),
13-punctata (As.), *nepalensis* (Nep.); *philippinensis* (Bom.), *Boh.*

Coptocycla, *Chevol.*—*sexnotata* (Mad.) *Fabr.*: *sexmaculata* (Mad.),
Dej.: *circumdata*, *varians*, *Herbst.*: *ventralis* (Nil.), *bistriculata* (Mad.),
bistri-notata (Ben.), *11-notata*, *17-notata*, *bipunctipennis* (Mad.),
promiscua, *7-notata*, *ornata* (Mad.), *cribrosa*, *Boh.*

References.

Westwood.—*Mod. Class. Ins.*, I., 376. 1836.

Boheman.—*Monographia Cassididarum*, Stockholm, 1850-55: *Catalogue of the Cassididae in the British Museum*, 1856.

Family *Galerucidæ*.

- Hymenesia*, *Clark*—*tranquebarica* (Mad.), *Fabr.*
Sphenoraima, *Clark*—*flavicollis* (N. I.), *nigripennis* (N. I.),
Clark.
Podontia, *Dalm.*—*rufo-castanea*, *Baly.*
Ædicerus, *Baly*—*apicipennis*, *Baly.*
Momæa, *Baly*—*purpurascens* (Nep.), *Hope.*
Menippus *Baly*—*cervinus* (Nep.), *Hope.*
Xuthea, *Baly*—*orientalis*, *Baly.*
Antipha, *Baly*—*picipes*, *Brettinghami*, *Baly*: *Bennettii* (Nep.),
Hope.
Mimastra, *Baly*—*arouata*, *Scr.*
Hyphasis, *Har.*—*nigricornis* (N. I.), *Bevani* (S. I.), *Baly.*
Phygasia, *Baly*—*dorsata* (As.), *Baly.*

References.

- Westwood*.—*Mod. Class. Ins.*, I., 381
Clark, H.—On Dejean's genus *Cælomera*. *An. Mag. N. H.*, 3rd Ser., XVI.,
 356, 315.
Baly.—On new species of *Galerucidæ*. *Ibid*, XVI., 247, 402.

Family *Eumolpidæ*.

- Chrysochus*, *Chevrol.*—*asiaticus* (N. I.), *Redt.*
Eumolpus, *Latr.*—*pyrophorus*, (As.), *Parry.*
Nodostoma, *Motsch.*—*Dormeri*, *Bevani*, *Baly.*
Corynodes, *Hope*—*gloriosus* (N. I.), *Baly*: *cyaneus* (Mad.),
Hope.
Eubraxis, *Chevrol.*—*indica* (Mus.), *Baly.*
Pachnephorus, *Redt.*—*Brettinghami*, *Baly.*
Pseudocolaspis, *Lap.*—*longicollis* (S. I.), *Baly.*

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- Marshall*.—Genera of *Eumolpidæ*. *An. Mag. N. H.*, 3rd Ser., XIII.,
 390.
Baly.—*J. Linn. Soc.*, XIV., 246.

Family *Chrysomelidae*—Golden-beetles.

Chlamys, *Knoch*—*fulvipes*, *Baly*.

Colosposoma, *Lap.*—*Downesii*, *Baly*.

Chrysomela, *Linn.*—*Krishna*, *Bonvouloirii*, *Stevensii*, *Baly*:
Vishnu (*Nep.*) *Hope*.

Ambrostoma, *Motsch.*—*Mahesa* (*Nep.*), *Hope*.

Crosita, *Motsch.*—*cælestina* (*N. I.*), *Baly*.

Eumela, *Baly*—*cyanicollis*, *Hope*.

Family *Halticidae*.

Xanthocycla, *Baly*—*Chapuisii*, *Baly*.

Argopus, *Fischer*—*Haroldi*, *Baly*.

Paradibolia, *Baly*—*indica*, *Baly*.

Chætocnema, *Steph.*—*cognata*, *sqarrosa*, *Bretinghami*, *concin-*
pennis, *basalis*, *Baly*.

Reference.

Westwood.—*Mod. Class. Ins.*, I., 385.

Family *Erotylidae*.

Languria, *Latr.*—*cyanea* (*Nep.*), *Hope*.

IV.—PSEUDO-TRIMERA.

Family *Endomychidae*—Fungus-beetles.

Endomychus, *Panzer*.—*bicolor*, *Gorham*.

Eumorphus, *Weber*—*tener*, *Dohrn*: *pulchripes*, *Gerst*.

Engonius, *Gerst.*—*signifer* (*N. I.*), *Gorham*.

Ancylopus, *Costa*.—*melanocephalus*. *Oliv*: *indicus* (*N. I.*), *Gorham*.

Mycetina, *Gerst.*—*castanea*, *Gerst*.

Family *Coccinellidae*—Lady-birds.

Coccinella, *Linn.*—*tricincta*, *Fabr.*: *repanda*, *Muls.*: *simplex*,
Walk.

Epilachna, *Chevrol.*—*28-punctata* (*Mad.*), *Fabr.*: *pubescens*
(*N. I.*), *Hope*.

Chilocorus, *Leach*—*oppenens* (*Mad.*), *Walk*.

Reference.

Westwood.—*Mod. Class. Ins.*, I., 390.

ORTHOPTERA.

The order Orthoptera (straight-winged) comprises the insects commonly known as ear-wigs, cockroaches, crickets, praying-insects, leaf-insects, spec-tres or stick-insects, locusts and grasshoppers. The body is composed of a head, thorax and abdomen. The head is furnished with a mouth, antennæ and eyes. The mouth consists of a labrum or upper lip, two mandibles, two maxillæ, a labium or under lip and four palpi or feelers. The mandibles are armed with teeth suitable to the food on which the insect lives. In the carnivorous species these teeth resemble the canine teeth of the mammalia, and in the herbivorous species they resemble the incisive and molar teeth of mammals. The maxillæ are furnished with 5-jointed palpi and a membraneous piece vaulted above and covering the extremity of the maxillæ. This piece is called the *galea* and is either cylindrical in shape or triangular or dilated and forms one of the bases of classification. The labial palpi are 3-jointed. The antennæ are many-jointed and are inserted in front of the eyes, but sometimes below or between them. The true eyes occupy the side of the head and are compound and usually very large. There are also two to three simple eyes or ocelli, either perfect or sub-obsolete. The thorax is composed of three parts, of which the prothorax is the largest and the only one exposed. The wings are four in number, of which the elytra or anterior pair are sub-coriaceous, thin and flexible, and the posterior pair or true wings are for the most part membraneous, reticulated and longitudinally folded after the manner of a fan. In some cases the females and even both sexes are apterous, and in the ear-wigs the posterior wings are transversely folded as in the beetles. In many species the elytra of the males are rudimentary and a transparent, hard, neurated membrane covers a portion of the inner margin of the elytra and produces by friction upon each other the stridulating noise remarked in certain families of the order. A similar sound is produced in other families by rubbing the thighs of the posterior legs against the edges of the elytra. The abdomen consists of eight or nine segments furnished at the end with certain appendages. There are six legs provided with feet adapted for running or jumping. The metamorphosis is incomplete : that is, there is no such marked differences in form between the larva, pupa and

imago as obtains in the beetles. The larvæ resemble the perfect insects, only they are much smaller and are without wings. After several moultings rudimentary wings appear, and this is supposed to mark the pupa state and again after several moultings the imago, with perfect wings appears.

The broad division of the order is into (1) *Cursoria*, in which the feet are adapted for running; the elytra and wings are placed horizontally to the body and the females are not provided with an ovipositor: and (2) *Saltatoria*, in which the posterior pair of legs are specially adapted for leaping. In the first division must be included the anomalous family *Forficulidæ* or ear-wigs, which many authors form into a separate order osculant between the beetles and the true *Orthoptera*. The Indian species of this family have not received much attention at the hands of naturalists. The cockroaches are exceedingly numerous in individuals and are cosmopolitan in their habits, the small *Blatta orientalis* of Europe being originally a native of India. They have not been thoroughly examined in this country probably owing to a prejudice against them on account of their offensive odour. The *Mantidæ* or praying insects are so called from the position of their fore-legs when lying in wait for their prey. They remain immovable in this attitude until a fly or other insect comes within their reach, when they quickly seize it and devour it. The *Phasmidæ* or spectres resemble dried twigs and attain some of them to a considerable size; many new species have been figured by Mr. Wood-Mason in the Calcutta Journal. Amongst the *Saltatoria*, the locusts belong to the family *Acrididæ*, and in *Scelymena Harpago* we have one that takes to the water and dives, the foliaceous appendages of the hind legs being well adapted for swimming. This is the first natatorial species of the order recorded and is found both in Bombay and in the upper provinces. The ravages of members of this family in India are too well known to need description. There are two forms of migratory locusts commonly met with. That with pink under-wings and brownish markings on the upper wings is apparently the *Æ. Edwardsii* of Westwood and occurs in swarms sufficient to break down the branches of trees on which they alight. Often for days together they pass over tracts of country in undiminished myriads, leaving whole square miles bare of all vegetation behind them. The colour of the under-

wings in this species varies from a very pale pink to a dark brown or maroon. The second and perhaps more common species in the North-Western Provinces has yellow under-wings and yellowish markings on the upper-wings. The larva of this species has the front of the head orange yellow, whilst the space behind and below the eyes is of a deep maroon and the posterior legs are of a bright yellow colour banded with black. Locusts have been found as far north as the passes leading into Tibet and are not uncommon permanent residents in the Bhábar, where there are also two or three species that occur in groups of many thousands, but are not so formidable as the two first mentioned. The female is not provided with an ovipositor and lays her eggs in some instances on the ground and in others on plants and attaches them by a gummy exudation produced at the same time. In some cases they are further protected by a frothy exudation which hardens by exposure. The eggs hatch in a few days and the larvæ are at once ready to satisfy their voracious appetite, which never appears to be satiated. To the *Gryllidæ* belongs the curious mole-cricket *Schizodactylus monstruosus* to be found in its burrow in the sands of the banks of any of our great rivers. It is easily recognized by the spiny excrescences on its legs and the net-like wings curled up at the end. It appears to be exclusively carnivorous in its habits and is not very numerous in individuals. The following list is very meagre, considering all that has been written on the Orthoptera, but I must leave to others the task of completing it:—

ORTHOPTERA.

I.—Cursoria.

Family *Forficulidæ*—Ear-wigs.

Forficula, Linn.—*auricularia* (Cal.), Linn.

Blattarise.

Family *Polyphagidæ*.

Polyphaga, Brullé—*indica*, Walker.

Family *Panesthidæ*.

Panesthia, Serv.—*plagiata*, *regalis* (As.), Walker: *monstruosa* (Mad.), *flavipennis* (As.), *Saussurti* (As.), *Wood-mason*: *transversa* (As.), *Burm.*: *æthiops* (In.); *Stoll.*: *forceps* (Mad.), *Sauss.*

Paranaupharta, *Watt.*—*limbata*, *Saussure.*

Parahormetica, *Watt.*—*bengalensis*, *Saussure.*

Family *Planetidae.*

Planetica, *Sauss.*—*phalangium*, *Saussure.*

Family *Panchloridae.*

Panchlora, *Burm.*—*surinamensis* (In.), *Sulz.*: *indica* (In.), *Fabr.*; *tenebrigera*, *occipitalis* (Bom.), *submarginata* (Bom.), *Walker.*

Family *Corydidae.*

Corydia, *Serr.*—*Petiveriana*, (Mad.), *Linn.*: *Gueriniana*, *Serr.*: *plagiata*, *Walker*: *ænea*, *Watt.*: *ornata*, *Sauss.*

Family *Blattidae.*

Phlebonotum, *Sauss.*—*anomalum*, *Sauss.*: *pallens* (Mad.), *Blanch.*

Epilampra, *Burm.*—*auriculata* (Bom.), *Watt.*: *cribrata* (As.), *blattoides*, *melanosoma*, *Sauss.*: *amplipennis* (As.), *intacta* (Bom.), *characterosa*, *Walker.*

Ellipsidium, *Sauss.*—*laterale* (As.), *Walker.*

Blatta, *Linn.*—*bivittata* (N. I.), *Serr.*: *parvula*, *brevipes* (Bom.), *continua*, *lycoides*, *telephoroides* (Bom.), *subreticulata*, *figurata*, *annulifera*, *transversalis*, *fasciceps*, *subfasciata*, *inexacta*, *subrotundata* (all Bombay), *ramifera* (Nep.), *submarginata* (As.), *Walker*: *cognata*, *ferruginea*, *Himalayica*, *Watt.*: *Luneli*, *Sauss.*

Theganopteryx, *Watt.*—*jucunda*, *indica* (Bom.) *Saussure.*

Periplaneta, *Burm.*—*americana* (In.), *Degeer*: *thoracica*, *æthiopica*, *Serr.*: *ornata*, *Watt.*: *affinis*, *Sauss.* *ruficornis* (Bom.). *curta* (Bom.), *Walker.*

Polyzosteria, *Burm.*—*orientalis*, *Burm.*: *heterospila* (Bom.), *sempustulata*, (Bom.), *Walker.*

Family *Perisphæridæ*.

Perisphæria, *Burm.*—*alta* (As.), *Walker*.

Blepharodera, *Burm.*—*sericea*, *emortualis*, *Saussure*.

Loboptera, *Watt.*—*indica*, *Watt*.

Family *Mantidæ*—Praying insects.

Mantis, *Linn.*—*simulacrum* (Ben.), *Fabr.*: *concinna*, *Perty*:
metallica (As.), *West*.

Hestias, *de Sauss.*—*Brunncriana*, (As.), *Sauss.*: *pictipes* (Cen.
M.) *inermis*, (As.) *Wood-Mason*.

Chæradodis, *Serv.*—*squilla* (In.), *Saussure*.

Empusa, *Ill.*—*gongylodes* (N. I.), *Linn*.

Fischeria, *Sauss.*—*laticops* (Bom. Mad.), *Wood-M*.

Hierodula, *Sauss.*—*birivia* (Mad.), *Stoll*.

Æthalochrea, *Wood-M*—*Ashmolia* (Ben.), *West*.

Campsothespis, *Sauss.*—*anomala* (Cal.), *Wood-M*.

Heterochaeta, *Sauss.*—*tricolor* (Cal.), *Wood-M*.

Paradanuria, *Wood-M*—*orientalis* (Mad.), *Wood-M*.

Schizocephala, *Serv.*—(*Didymocorpha*) *ensifera* (Ben.), *Wood-M*:
bicornis, *Linn*.

Family *Phasmidæ*—Stick-insects.

Phyllium, *Ill.*—*crurifolium*, *Serv.*: *Robertsonii* (Nil.), *Hope*:
Scythe (As.): *West*.

Necroscia, *West.*—*bimaculata* (Mad.), *Stoll*: *annulata* (Mad.),
Fabr.: *affinis*, *punctata*, *marginata* (Mal.),
Gray: *Sipylus* (As.), *Pholidotus* (As.), *atri-*
coxis, *Casignetus* (As.), *Sparaxes*, *lularis*
(As.), *maculicollis* (As.), *West.*: *Menaka*
(As.), *Wood-M*.

Cyphocrania, *Serv.*—*gigas*, *Linn.* (var. = *Empusa*, *Gray*).

Creoxylus, *Serv.*—*auritus*, *Fabr*.

Xeroderus, *Gray*—*manicatus*, *Licht*.

Lopaphus, *West.*—*bootanicus* (As), *Baucis* (As.), *West*.

Heteropteryx, *Gray*—*dilatata*, *Parkinson*.

Phibalosoma, *West.*—*serratipes* (Mal.), *Gray*: *Westwoodii* (As.),
unnamalynnium (Mad.), *Wood-M*.

Anophelepis, *West.*—*despecta* (As.), *West.*

Lonchodes, *Gray.*—*luteoviridis* [= *lacertinus*, *West*], (As.); *bicoronatus* (); *semiarmatus* (); *virgens* [= *sarmantonus*, *West*] (As.); *Porus*; *Stilpnus* (As.); *Myrina* (Mad.), *West.*: *brevipes* (Mal.), *geniculatus Gray*: *Austeni* (As.); *Westwoodii* (Cal.); *insignis* (Sik.), *Wood-M.*

Bacteria, *Latr.*—*Shiva* (In.), *West.*

Menaka, *Wood-M.*—*scabriuscula* (As.), *Wood-M.*

Bacillus, *Latr.*—*indicus*, *Gray*: *tranquebaricus* (Mad.); *Beroë*; *Regulus*; *cuniculus* (As.); *Alauna* (Mad.); *Artemis* (As.); *Amathia* (Mad.), *West*: *lævigatus* (As.); *fuscolineatus* (Panj.); *Penthesilea* (Bhután), *furcillatus* (Bhutan), *Wood-M.*

II.—Saltatoria.

Family *Gryllidæ*.

Gryllotalpa, *Leach*—*africana* (Mal. N. I.), *Pal. Beauv.*: *ornata*, *Walker.*

Acheta, *Fabr.*—*monstrosa* (N. I.), *Drury.*

Brachytrypes, *Erichs.*—*achatinus*, *Stoll.*: *terrificus* (Mad.), *signatipes* (Bom.), *ferreus* (Mad.), *bisignatus*, *truculentus*, *Walker.*

Gryllus, *Lin.*—*erythrocephalus* (Ben), *melanocephalus* (Ben.), *Serr.*: *capensis*, *Oliv.*: *orientalis* (Mad.), *Fabr.*: *conscitus* (Nep.), *signifrons* (N. I.), *facialis* (Bom.), *humeralis* (Bom.), *ferricollis* (Bom.), *angustulus* (Bom.), *lineiceps* (Bom.), *configuratus* (Bom.), *parviceps* (Bom.), *signipes* (Bom.), *Walker.*

Nemobius, *Serr.*—*indicus*, *vagus* (Bom.), *Walker.*

Madasumma, *Walker*—*ventralis* (N. I.), *Walker.*

Encoptera, *Burm.*—*fascipes* (N. I.), *concolor* (Bom.), *lateralis*, (Bom.), *albostriata* (Bom.), *Walker.*

Meloidomorpha, *Walker*—*cincticornis* (Bom.), *Walker.*

Platyductylus, *Brullé*—*transversus* (As.), *apertus* (N. I.), *pallidus* (As.), *Walker*: *marginipennis*, *Guer.*

- Ceacanthus*, *Serv.*—*rufescens* (Bom.), *Serville*.
Prophalangopsis, *Walker*—*obscura*, *Walker*.
Phalangopsis, *Serv.*—*albicornis* (N. I.), *picticeps*, *Walker*.
Ornebius, *Guérin*—*nigripalpis* (Mad.), *Guer*.
Platyblemmus, *Serv.*—*lusitanicus*, *delectus* (Ben.), *Serv.*

Family *Locustidæ*.

- Gryllacris*, *Serv.*—*plagiata* (As.), *contracta*, *aliena* (As.), *scita*,
magniceps, *trinotata* (Bom.), *collaris* (As.)
gracilis (Ben.), *basalis* (Bom.), *Walker*,
signifera (Bom. As.), *Stoll*: *amplipennis*,
(Mal.), *gladiator* (Mad.), *Gerst.*
- Rhapidophora*, *Serv.*—*picea* (As.), *Serville*.
Noia, *Walker*—*testacea*, *Walker*.
Decticus, *Serv.*—*concinus* (Nep.), *pallidus* (N. I.), *Walker*.
Xiphidium, *Serv.*—*posticum* (As.), *Walker*.
Letana, *Walker*—*linearis* (N. I.), *Walker*.
Ladnia, *Walker*—*punctipes* (N. I.), *Walker*.
Saga, *Charp.*—*indica*, *Herbst*.
Conocephalus, *Thaub.*—*interruptus* (N. I.), *strenuus* (N. I.),
varius (As.), *Walker*.
Megalodon, *Brulle*—*ensifer* *Brulle*.
Phaneroptera, *Serv.*—*punctifera* (As.), *roseata* (N. I.), *privata*
(As.), *insignis* (As.), *notabilis* (As.), *diversa*
(As.), *nigrosarsa* (Bom.), *Walker*, *rufono-*
tata (Bom.), *Serv.*
- Ancylecha*, *Serv.*—*lunuligera* (As.), *Serville*.
Steirodon, *Serv.*—*unicolor*, *Stoll*.
Tedla, *Walker*—*sellata* (As.), *simplex* *Walker*.
Pseudophyllus, *Serv.*—*Titan* (As.), *White*: *femoratus*, *fenestratus*,
neriifolia (As.), *Stoll*: *uninotatus* (As.), *ole-*
ifolius (Mad.), *Serv.*: *assimilis* (As.), *veno-*
sus (As.), *siccus* (As. Mad.), *concinus*
(As.), *signatus*, *sublitoratus*, *Walker*.
Aprion, *Serv.*—*carinatum*, *porrectum* (As.), *strictum* (Bom.),
curviferum (Bom.), *Walker*.

Sanaa, *Walker*—*imperialis* (N. I. As.), *White* : *Donovani*, (As.),
quadrıtuberculatus, *Westwood*.

Cymatomera, *Schaum*—*rugosa* (In.), *Linn.* : *viridivitta* (Mal.),
Walker.

Mecopoda, *Serv.*—*elongata* (As. N. I.), *Linn.*

Family *Acrididae*.

Truxalis, *Fabr.*—*nasuta* (N. I.), *Linn.* : *unguiculata* (N. I.),
Ramb.

Pyrgomorpha, *Fischer*—*crenulata* (N. I.), *Fabr.* : *bispinosa*
(S. I.), *Walker*.

Mesops, *Serv.*—*filatus* (N. I.), *Walker*.

Opomala, *Serv.*—*laticornis* (Bom. N. I.), *Serv.* : *convergens*,
(N. I.), *tarsalis*, (As.) *semipicta* (S. I.),
Walker.

Xiphocera, *Latr.*—*fumida* (S. I.), *Walker*.

Phymateus, *Serv.*—*miliaris* (Nep. N. I.), *Linn.*

Pæcilocera, *Serv.*—*picta* (N. I.), *Fabr.* : *punctiventris* (Bom.),
Serv. : *ornata*, *Burm.*

Teratodes, *Brullé*—*monticollis* (In.), *Gray*.

Cyrtacanthacris, *Serv.*—*flavicornis* (As.), *Fabr.* : *inficita* (N. I.),
Walker.

Acridium, *Geoff.*—*succinctum* (N. I.), *Linn.* : *flavescens* (S. I.),
Fabr. : *pardalinum* (S. I.), *vinosum* (N.
I.), *saturatum* (S. I.), *dorsale* (S. I.),
nitidulum (S. I.), *Walker*.

Apalacris, *Walker*—*varicornis* (N. I.), *Walker*.

Oxya, *Serv.*—*velox* (Mal.), *Fabricius* : *furcifera* (Bom.), *Serv.*

Heteracris, *Walker*—*illustris* (S. I.), *elegans* (N. I.), *insignis*
(Ben.), *ducalis* (As.), *apta* (As.), *varicornis*
(S. I.), *Walker* : *alacris*, *Serv.*

Caloptenus, *Burm.*—*insignis*, *glauropsis* (N. I.), *litorifer* (S. I.),
erabescens (N. I.), *scutifer* (S. I.), *dominans*
(As.), *ferrugineus* (N. I.), *scaber* (Ben.),
nepalensis (Nep.), *immunis* (Bom.), *pustulipennis* (Bom.), *Walker*.

- Cœdipoda, Charp.*—*flava* (In.), *Linn.*: *Edwardsii* (In.), *Hope:venusta* (S. I.), *crassa* (N. I.), *inficita*, (N. I.), *rotundata* (N. I.), *granulosa* (Biluch.) *Walker*.
- Stenobothrus, Fischer*—*mundus* (Bom.), *decisus* (Bom.), *apicalis* (Bom.), *epacramoides* (Bom.), *turbatus*, (Bom.), *luteipes* (Bom.), *strigulatus* (Bom.) *simplex* (Bom.), *Walker*.
- Epacromia, Fischer*—*simulatrix* (S. I.), *aspera* (N. I.), *turpis*, (N. I.), *Walker*.
- Cernacris, Walker*—*nigricornis* (N. I.), *Walker*.
- Chrotogonus, Serv.*—*trachypterus* (Bom.), *liaspis* (Bom.), *oxyp-terus* (Bom.), *pallidus* (Bom.), *Blanchard*.
- Phyllochoreia, West*—*fenestrata* (Ben.), *Serv.*: *unicolor* (Mal.), *West*.
- Tettix, Fischer*—*munda* (N. I.), *umbrifera* (Bom.), *lineifera*, (Bom.), *vittifera* (Bom.), *dorsifera* (Bom.), *obliquifera* (Bom.), *nigricollis* (Bom.), *lineosa* (Bom.), *quadrilagiata* (N. I.), *balteata* (S. I.). *Walker*.
- Scelymena, Sauss.*—*Harpago* (Bom. In.), *uncinata*, *Serville.*: *contracta* (Mad.), *Walker*.

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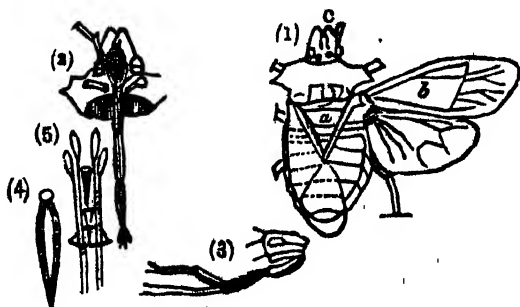
HEMIPTERA.

The order Hemiptera (half-winged) comprises those insects commonly called cicadas, bugs, plant-lice and the lice that prey on animals. With the exception of the males of the gall-insects and a few others the metamorphosis is incomplete and the change from the larva to the pupa state, and thence to the imago state, is not so well marked as in other orders of insects. The body is composed of a head, thorax and abdomen. The head is furnished with a mouth, eyes and antennæ. The oral apparatus is adapted for sucking and consists of three or four delicate pointed *setæ* or threads enclosed in a case which is curved downwards or disposed along the breast between the bases of the legs. The case is tubular and jointed and the threads within represent the mandibles and maxillæ of other insects. The *labrum* is present and in the shape of a *ligula* of triangular form protects the basal portion of the sucker and the *labium* is represented by the sheath, but palpi are wanting. The sucker is adapted only for extracting vegetable and animal matter in a fluid state and does not contain a sting, though the result of its application to the human body closely resembles the effect of the sting of other insects. The eyes are large and between them in many species there are 2-3 ocelli or simple eyes. The antennæ are very short and small in many families and are usually 4-5 jointed and seldom more than 11-jointed. The thorax consists of three parts, and in some genera the prothorax becomes incorporated with the mesothorax and in others it resembles that of the beetles. The scutellum in some species is very minute and in others covers the entire abdomen. The elytra of a great portion of the insects of this order are for the most part coriaceous with the tips membranous and the under-wings are membranous throughout. There are six legs and there are never more, though there are often less than three joints in the tarsus or foot. The disagreeable odour so marked in insects of this order is caused by a fluid which is expressed from a sac or gland at the will of the insect and escapes through two small apertures on the underside of the metathorax, near the insertion of the third pair of legs.

In figure A (after Westwood), *Pentatoma rufipes* is shown (1) about twice the natural length with the antennæ and legs

truncated, and with the wings on one side extended ; *a* represents the scutellum ; *b*, the coriaceous portion of the elytra ; and *c*, the base of the antennæ. In (2) we have the underside of the head and prothorax of the same insect, showing the elongated 4-jointed case or sucker (*labium*), the basal joint of which is partially covered by the elongated and triangular *labrum* (4) and at the apex are perceived the tips of the four enclosed *setæ* or hair-like processes representing the maxillæ and mandibles. In (3) we have the head of the same insect viewed laterally to show the lobes defending the base of the *labium* and the manner in which the latter is able to bend, with two of the enclosed *setæ* drawn out at the tip of the second joint and the tips of the other two seen at the end of the case. In (5) we have the dilated base of the four internal *setæ* as seen within the head on removing the *clypeus* or upper covering, and between the middle pair may be observed the pointed cartilaginous *ligula* or tongue, behind which is a small oval aperture which is the orifice of the pharynx.

FIG. A.



The Hemiptera are primarily distributed into two great sub-orders: (1) Hemiptera-Heteroptera, in which the elytra are coriaceous at the base and membranous at the apex (*hemelytra*) and the rostrum is frontal, rising from the anterior part of the head ; and (2) Hemiptera-Homoptera, in which the substance of the wings is homogeneous throughout and the beak rises from the inferior part of the head and is inflected beneath the thorax between the bases of the legs.

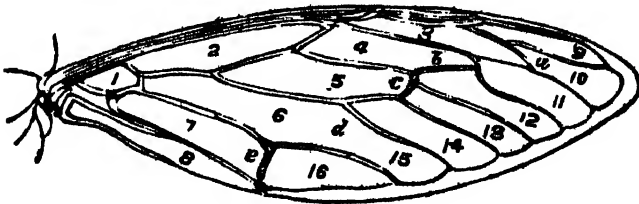
The Heteroptera are further distributed into some seventy families arranged under two classes, the *Gymnocerata* in which the antennæ are visible and

Heteroptera.

the legs are not natatorial and the *Cryptocerata* in which the antennæ are hidden and the legs are natatorial. They are all provided with organs adapted for sucking the juices of plants or animals and live either in water or breathe the free air, facts which have also led to their distribution into *Hydrocorisæ* or water-bugs and *Geocorisæ* or land-bugs. The first three families on the list live on plants from which they extract the juices by means of the sucker with which they are furnished. Many of them are of brilliant colours, especially the genus *Calleida*, and all have the scutellum abnormally developed. They are well represented in India, where some are of a delicate green, others of a navy blue, others red, brown and yellow beautifully varnished. A large red bug, of which the female measures nearly two inches in length, is common on the *lahsora* (*Cordia Myxa*) in the forests of the submontane tract. *Coptosoma cribrarium*, procured at Allahabad, is of a deep brown, tubercled or mottled and at first sight has the appearance of a beetle, but its odour soon betrays its real affinity. In the family *Pentatomida* the scutellum does not cover the whole of the body. The insects of this family are commonly known as wood-bugs, of which the Indian species are often enriched with brilliant colours. Their larvæ differ from the perfect insect only in the absence of wings and the pupæ in having only rudimentary wings. In all states they live on vegetable juices. The species of the genus *Strachia* belonging to this family are found on various members of the cabbage tribe and with others are common pests in our gardens. They can never be mistaken for other insects since almost all of them exhale the disagreeable odour common to them with the bed-bug (*Cimex lectularius*). In the *Edessida* the body is very flat with the margins notched, dilated and angular, and in the *Coreida* there is no apparent neck and the head is trigonal and sunk in the prothorax. The bugs of the latter family are said to feed on other insects as well as on the juices of plants. Amongst the *Lygoidæ* mention may be made of *L. grandis* from Upper India. It is red with two spots on the elytra and with the antennæ, tibia and tarsi black. The *Reduvida* consist of certain minute species that prey on other insects and even on the bed-bug. The *Belostomatida* and *Nepida* are water-bugs, but this division requires much more careful examination than it has hitherto had in India.

In the Hemiptera-Homoptera there are three sub-divisions, *Cicadina*, *Phytophithires* and *Anoplura*. To Homoptera. the first belong the families *Stridulantiæ*, *Cercopidæ*, *Jassidæ* and *Fulgoridæ* : to the second the plant-lice ; and to the third the lice that prey on animals. The terminology of the neuration in the Homoptera may be gathered from the following figure representing the fore-wing of a *Cyclochila* belonging to the family *Stridulantiæ* :—

FIG. B.



Explanation.—1, primitive ; 2, front ; 3 to 8, first to sixth discoidal cells : 9 to 16, first to eighth marginal areolets : *a, b, c, d, e*, first to fifth transverse veins.

The cicadas, lantern-flies and wax-insects belonging to the first divisions are amongst the most curious examples of insect life. The stridulation of the cicadæ is a familiar sound to all in India and is at times so loud as to be almost deafening. It is produced in the males only and the apparatus is thus described by Wilson :—
 “ When we examine the lateral base of the abdomen of a male cicada, we perceive two large scaly plates of a rounded figure, approaching that of a demi-oval, cut through its smaller axis ; so that each plate presents a side which is rectilinear, while the remaining portion exhibits a rounded outline. It is by the straight side that each plate is fixed without articulation on the metathorax of which it forms a portion. When we lift up these plates we discover a cavity on each side of the abdomen divided into two principal chambers by a horny triangular septum. When viewed from the side of the abdomen, each cell presents anteriorly a white and plaited membrane, thin, light and as transparent as glass, called *le miroir* by Beaurmur. If we open the mirror from above we perceive on each side of it another plaited membrane moved by a powerful muscle composed

of a great number of straight parallel fibres and arising from the horny septum. This latter membrane is the tympanum or drum on which the muscles act by contraction and relaxation, alternately tightening and restoring it to its original state. This is the true origin of the sound which in fact may be produced even after the death of the insect by jerking the muscle." The cicadæ live on shrubs and trees, of which they suck the juices. The female lays her eggs in holes which they form in the branches and which may be recognised by little irregularities formed by a portion of the wood which has been raised. The larvæ are white and have six legs and soon escape to the ground and burrow in it to live on the roots of plants. They then undergo the change to the pupa state, and after about a year appear as perfect insects. In the *Fulgoridæ* the antennæ are inserted immediately beneath the eyes and the head is dilated in front into a protuberance which is said, in the living insect, to emit a strong light. The *Cercopidæ* are remarkable for the frothy matter with which some species surround their larvæ, called cuckoo-spittle in England. At one time it was thought that in *Flata limbata*, found in Kumaon, we possessed an equivalent to the wax-yielding insect of China of which Sir G. Staunton and the Abbé Grossier have given an account, but Captain Hutton's researches show¹ that the deposit of the former is of a different character and does not possess the properties of the white-wax of China. Amongst the *Phytophthires*, the *Psyllidæ* are distinguished by their third pair of legs being formed for leaping. They are nourished by the juices of trees and various plants on which they live. The *Aphidina* include the plant-lice, which are furnished with two horn-like projections at the posterior extremity that exude a sugary, transparent liquor much affected by ants. These minute insects dwell together in societies and walk slowly and cannot leap, so that they fall an easy prey to the larvæ of the Neuropterous genus *Hemero-bius*, to those of several species of Diptera, and especially to the grubs of the lady-birds.

In the third family or *Coccidæ* there is at least one or two local species that deserve some further notice. Geoffroy attributed to a species of kermes the faculty of producing a sugary substance of a white colour resembling manna, and Captain Frederick gave an

¹ J. A. S. Journ., XII., 339.

account of a manna-like substance called *gez* found in Persia, but was doubtful whether it was of vegetable or insect origin. Subsequently General Hardwicke described¹ an insect under the name *Chermis mannifer*, obtained on a *Celastrus* at Pachmarhi in the Central Provinces, and which yielded a similar manna of a waxy nature. He described the insect as of about the size of the common bed-bug, of a flattened ovate form and with a rounded tail. The snout is longer than the thorax, inflected and pressed down between the legs: the antennæ are 3-jointed and as long as the thorax; first joint minute, second clavate and much the largest, and third setaceous: legs long, formed for walking, tarsi 3-jointed, wings rudimentary: colour light brown. The substance produced by these insects appeared to project from the abdomen in the form of a tail or bunch of feathers like snow which gradually lengthened and fell on the leaves, where it caked and hardened like wax. The same insect has been recorded from Kumaon, where it is found on the *Elæodendron Roxburghii*, the *debari* of the outer range and Siwâlik tract. Mr. Thompson writes:—"It will be known by its clustering around the stem in large numbers conspicuous for the white downy appearance which the long filamentary processes issuing from its body give it. Some of these pretty creatures will remind one of a porcupine with all its quills bristling. They excrete a white substance of a sweet taste and which cakes on the leaves of the plant they affect." A similar phenomenon is observed in the lac-insect (*Coccus lacca*, Kerr), which yields the resin and lac-dye of commerce. We have its life-history in a series of observations made by Mr. Carter in Bombay in 1860 on certain specimens procured by him on the custard-apple tree (*Anona squamosa*). This insect is also found in the forests along the foot of the Kumaon hills and in the Dâns, chiefly on the *dhak* (*Butea frondosa*), *pipal* (*Ficus religiosa*), and other fig-trees. The first thing that struck Mr. Carter on looking at the surface of the resinous incrustation within which the insects were alive was the presence of a white kind of powder like that observed around the cochineal insects. This is concentrated here and there in little spots, and on being more closely examined will be seen to be chiefly confined to three bunches of curly, hair-like filaments which radiate from three

¹ Trans. Bom. Lit. Soc., 1. Soc., 1., 108, (sect.): III., 178.

² An. Res. XIV., 184; see also J. Linn.

small holes in each spot in the incrustation and are continuous with corresponding apertures in the insects from which the white filaments originally proceed. These filaments are shown to be the attenuated extremities of the tracheæ or breathing arrangements of the insect, covered with a white powder which after impregnation increases so as to cover the whole of the branch occupied by the insects. This description shows that the so-called manna is produced by a *Coccus* closely allied to the lac-insect whose history we shall now record.

The young are ovi-viviparous and issue from the body of their parent about the beginning of July as an elliptical grub of a red colour, one-fortieth of an inch long and possessed of six legs, two antennæ and two ocelli.¹ The mouth is placed on the ventral surface at some distance from the anterior extremity and is in time furnished with *setæ* or hairs and a proboscis by which it attaches itself to the bark of the tree on which it lives. It at once commences to grow in size and to secrete the resinous substance with which its entire body, except the anal orifice, is ultimately enveloped. By the middle of August, the distinction of the sexes is completed and the male becomes more highly developed and leaves an opening for exit, whilst the female remains enclosed in the resin. The males of the summer brood are possessed of antennæ, of which the *scapus* is 2-jointed and the *flagellum* has seven joints; they have also four eyes and a caudal apparatus for impregnation: in the winter brood they are also furnished with wings. Impregnation takes place in the first week of September and the young brood appear swarming out of the anal orifice of the female at the end of the first week in December, when, again the same changes occur, resulting in a second brood in the first week of the following July. The red colouring matter appears first in the ovary of the female after impregnation in the shape of a large number of spherical globules and then in the young *Coccus* itself, and therefore the time when both colouring matter and resin will be at its maximum will be for the summer brood during June and for the winter brood during November. Propagation can be effected by transferring a stick encrusted with the resin just before the time of evolution and tying it to the tree on which it is desired to rear the brood.

¹ *Ann. Mag. N. H.* 3rd Ser., VII., 1, 263 (plates).

In the following list I have added the locality 'Bur.' (Burma) to those species recently recorded from that country by Mr. Distant¹ to show the wide geographical distribution of some species:—

I.—HEMIPTERA—HETEROPTERA.

Family *Plataspidae*.

Brachyplatys, *Boisd.*—*silphoides* (As.), *VahlII* (As.), *Fabr.*: *subænea* (N. I.), *Hope*: *radians* (As.), *Voll.*: *Burmeisteri* (As.), *Dist.*: *bistriga* (Mad.), *Walker*.

Coptosoma, *Lap.*—*cribrarium* (N. I.), *Fabr.*: *12-punctatum*, *circumscriptum* (N. I.), *sphaerulum* (N. I.), *Germ.*: *nepalensis*, *parvulum*, *cicatricosum* (N. I.), *Dallas*: *xanthochlorum*, *integrum*, *Walker*.

Plataspis, *West.*—*nitens* (N. I.), *Dallas*: *nitida*, *hemisphaerica*, *Hope*.

Family *Cydnidae*.

Æthus, *Dall.*—*foveolus* (N. I.), *maurus* (In.), *pygmaeus*, *apicalis* (N. I.), *Dallas*: *indicus* (N. I.), *Hope*: *transversus*, *Burm.*: *brevipennis*, *Fabr.*: *Badius*, *Walker*.

Stibaropus, *Dall.*—*brunneus* (N. I.), *Dallas*: *testaceus*, *Walker*.

Family *Pachycordis*.

Cantao, *Serv.*—*ocellatus* (As.), *Thun.*

Scutellera, *Lam.*—*nobilis* (In.), *Fabr.*: *fasciata* (Nep., As.), *Funser*.

Sophela, *Walker.*—*spinigera*, (As.), *Dallas*.

Brachyanlax, *Dist.*—*oblonga* (N. I., As.), *Hope*.

Pacilocoris, *Dall.*—*interruptus* (Nep.), *purpurascens* (Nep.), *Hardwickii* (Nep., As.), *Hope*: *Druzei* (N. I., As.) *Lin.*: *Childrenii* (Nep.), *White*: *obesus* (N. I., As.), *rufigenis* (As.), *obsoletus* (N. I.), *ornatus* (N. I.), *pulchra* (Mad.), *Dall*: *anisopilus* (As.), *Walker*.

- Chrysocoris*, *Hüb.*—*patricius* (As.), *Fabr.*: *grandis* (As., Bur.),
Thunb.: *purpureus* (As.), *Hope*.
- Lamprocoris*, *Stål.*—*Roylei* (Nep., As.), *Hope*: *spiniger* (As.),
Dall.
- Callidea*, *Dall.*—*Baro* (As.), *purpurea* (Ben., Bom.), *Fabr.*: *Stolii*
(As., N. I.), *Wolff*: *marginella* (Bom.), *ben-*
galensis, *Roylei*, *Hope*: *pulchella* (As.),
Dall.: *Stockerus*, *Linn.*: *fascialis* (As.),
White: *lateralis* (As.), *dilatocollis*, *Guérin*.
histeroides (As.), *scripta* (As.), *gibbula*
(Panj.), *contraria porphyricola*, *Walker*.
- Hotea*, *Serv.*—*curculionoides* (As., Burm.), *H.-S.* *nigrorufa*,
diffusa, *Walker*.
- Elvisura*, *Spinola*—*spinolæ*, *Signoret*.
- Sphærocoris*, *Burm.*—*lateritius*, *Hope*: *rusticus* (Mad.), *Stoll*.
- Coeloglossa*, *Germ.*—*rubro-punctata*, *Guér.*
- Alphocoris*, *Germ.*—*lixiodes* (N. I.), *Germ.*

Family *Asopida*.

- Oazira*, *Serv.*—*verrucosa* (In.), *ulcerata*, (Mad.), *West*.
- Cecyrina*, *Walk.*—*platyrhinoides* (As.), *Walk*.
- Canthecona*, *Serv.*—*furcillata* (Bom., N. I.), *Wolff*: *grisea* (N. I.),
Dall.: *tibialis* (As.), *binotata* (As.), *nigrivitta*
(As.), *Dist*.
- Picromerus*, *Serv.*—*spinidens* (As.), *Fabr.*: *obtusus* (As.), *nigri-*
vitta, (As.), *Walk.*: *robustus* (As.), *Distant*.

Family *Podopida*.

- Podops*, *Lap.*—*niger*, *Dall.*: *spinifer*, *Hope*: *limosus*, *Walker*.
- Scotinophora*, *Voll.*—*lurida* (As.), *Burm.*: *obscura* (As.), *Dall.*:
tarsalis (As.), *Voll*.
- Aspidestrophus*, *Stål.*—*morii* (As.), *Stål*.

Family *Sciocorida*.

- Sciocoris*, *Fall.*—*indicus* (N. I.), *Dall.*: *gastricus*, *Thunb.*: *rufi-*
cornis, *Fabr.*: *lateralis*, *Fieb*.
- Laprius*, *Dist.*—*varicornis* (N. I., As.), *Dall.*

Mecidea, *Dall.*—*indica* (Ben.), *Dall.*

Ædrus, *Dall.*—*ventralis* (As.), *Dall.*

Family *Halydidae*.

Agonoscelis, *Spin.*—*nubila* (As., N. I.), *Fabr.*: *femoralis* (N. I.),
Walker.

Cestopis, *Dist.*—*terra* (As.), *Dist.*

Erthesina, *Spin.*—*acuminata* (N. I.), *Dall.*: *Fullo* (As.), *Thumb.*

Dalpada, *Serv.*—*oculata* (As., Burm.), *clavata* (N. I., As.), *Fabr.*:
nigricollis, *varia* (As., Burm.), *affinis* (N. I.),
Dall.: *versicolor* (N. I., As.), *Sch.*: *confusa*
(Marri), *Dist.*: *bulbifera*, *tecta* (As.), *bre-*
vivitata (As.), *Walker.*

Agæus, *Dall.*—*tessellatus*, *Dall.*

Halys, *Fabr.*—*dentata* (Bom., N. I.), *Fabr.*

Family *Pentatomidæ*.

Bolaca, *Walker.*—*unicolor* (N. I.), *Walker.*

Belopis, *Dist.*—*unicolor* (As.), *Dist.*

Mormidea, *Serv.*—*socia* (N. I.), *nigriceps*, *Walker.*

Ælia, *Fabr.*—*glandulosa* (N. I.), *Burm.*

Cratonotus, *Dist.*—*coloratus* (As.), *Dist.*

Hoplistodera, *Hope*—*virescens* (N. I.), *Hope.*

Æschrus, *Dallas.*—*obscurus* (N. I.), *Dall.*

Axiagastus, *Dall.*—*Rosmarus* (As.), *Dall.*

Stollia, *Dist.*—*guttigera* (As.), *Thumb.*

Apines, *Dall.*—*concianna* (N. I.), *Dall.*

Pentatoma, *Oliv.*—*cruciata* (N. I.), *Fabr.*: *pallida* (N. I.), *macu-*
licollis (N. I.), *elongata* (N. I., As.), *parvula*,
pulchra, *crossota* (N. I.), *cruciata* (N. I.),
Dall.: *inconcianna*, *vicaria*, *Walker.*

Palomena, *Dist.*—*Reuteri* (Marri), *spinosa* (N. I.), *Distant.*

Tolumnia, *Ellen.*—*latipes* (As.), *Dall.*

Halyomorpha, *Dist.*—*piens* (As.), *Fabr.*: *scutellata* (As., Bom.),
Dist.

Cappæa, *Ellen.*—*taprobanensis* (As.), *Walk.*

Strachia, *Hahn*—ornata (N. I.), *Linna.*: picta (N. I.), *Fabr.*: speciosa (N. I.), *Dall.*: crucigera (As., Burm.), *Hahn*: decorata, *Schaum*: limbata (As.), *Stål.*: liturifera (N. I.) designata, velata (N. I.), pardalis, inornata, afflicta, *Walker*.

Bathycelia, *Serv.*—indica (N. I.), *Dall.*

Catacanthus, *Spin.*—incarnatus (In., Burm.), *Drury*.

Plautia, *Stål.*—fimbriata (As.), *Fabr.*

Antestia, *Stål.*—anchora (As., Burm.), *Thunb.*: apicalis (N. I.), *Dallas*.

Nezara, *Serv.*—viridula (As.), *Linnae* subsericeus (N. I.), *Hope*: humeralis (As.), *Walk*.

Prionoehilus, *Dist.*—8-punctatus (As.), *Dall.*

Rhaphigaster, *Serv.*—macracanthus (N. I.), humeralis (As.) *Dall.*: flavolineatus (N. I.), *Mayr.*: strachioides, rubriplaga, bisignatus, patulus (N. I.), *Walker*.

Cuspicona, *Dall.*—plagiata (N. I.), *Walker*.

Menida, *Dist.*—flavovaria (As.), *Dall.*: distincta (N. I.), *Dist*.

Prionaca, *Dall.*—lata (As., Burm.), *Dall.*: exempta (As.), *Walk*.

Microdeuterus, *Dall.*—megacephalus (N. I.), *Sch*.

Diplostira, *Dall.*—valida (As.), *Dall*.

Rhynchocoris, *West.*—humeralis (As.), *Thunb.*: serratus (Mad.), *Don*.

Sastragala, *Serv.*—uniguttata (As.), *Don*.

Acanthosoma, *Serv.*—punctatum (N. I.), distinctum (N. I.), forfex (N. I.), elongatum (N. I.), recurvum (N. I.), cornutum (N. I.), *Dall.*: heterospila (Panj.), binotata, aspera (N. I.), truncatula, immunda, alaticornis, nigricornis, *Walker*.

Asyla, *Walker*—indicatrix, *Walker*.

Family Urostylidae.

Urochela, *Dall.*—bimaculata (N. I.), obscura, quadripunctata, *Dall.*: discrepans, *Walker*.

Urostylis, *West.*—*punctigera* (As.), *histrionica*, *Hope* : *gracilis* (N. I., As.), *notulata*, *pallida* (N. I.), *Dall.* : *fumigata* (As.), *lopoides*, *Walker*.

Urolabida, *West.*—*tenera* (As.), *Hope* : *Grayii* (As., Nep.), *White* : *binotata* (As.), *Walker*.

Family *Edessidæ*.

Tessaratomya, *Serv.*—*papillosa*, *Drury* : *malaya* (As.), *Stål* : *chinensis*, *Thunb.* : *javanica* (N. I.), *scutellaris* (As.), *Stoll*.

Eusthenes, *Lap.*—*cupreus* (In.), *Hope* : *robustus* (As.), *Serv.* : *Polyphemus* (N. I.), *Stål*.

Eurostus, *Dall.*—*grossipes* (As.), *Dall*.

Mattiphus, *Serv.*—*oblongus* (N. I.), *Dall* : *nigradorsis*, *Stål*.

Pycnanum, *Serv.*—*rubens* (As.), *amethystinum*, *Fabr.* : *jaspideum*, *Schaum* : *amplicolle ponderosum* (As.), *Stål.* : *stabile*, *pallipes* (N. I.), *Walker*.

Dalcantha, *Serv.*—*dilatata* (As.), *Serv.* : *inermipes* (Panj.), *Stål* : *regia*, *Walker*.

Cyclopelta, *Serv.*—*obscura* (As., Burm.), *Serv.* : *tartana* (As.), *Stål.* : *siccifolia* (N. I.), *Dall*.

Aspongopus, *Lap.*—*Janus* (In.), *obscurus* (In.), *Fabr.* : *ochreus* (As.), *nigriventris*, *nepalensis* (As., Nep.), *sanguinolentus*, *Hope* : *marginalis* (As.), *Dall.* : *circumcinctus*, *Walker*.

Muscanda, *Walker*—*testacea* (As.), *Walker*.

Family *Phyllocephalidæ*.

Placosternum, *Serv.*—*Taurus* (As.), *Fabr.*

Dalsira, *Serv.*—*glandulosa* (As.), *Wolf*.

Tetroda, *Serv.*—*histeroides* (As.), *Fabr.* : *transversalis* (N. I.), *West.* : *divaricata* (Nep.), *atomaria* (N. I.), *nigripennis* (N. I.), *obtusa* (N. I.), *Dall.* : *bilineata*, *Walker*.

Cressona, *Dall.*—*Valida*, *Dall*.

Atelides, *Dall.*—*centrolineatus* (As.), *Dall*.

Macrina, *Serv.*—*coccinea* (As.), *Walk.* : *dilatata* (As.), *Dist*.

Megarhynchus, *Lap.*—*limatus* (As.), *Sch.* : *hastatus*, *Fabr.* : *testaceus*, *Serv.* : *truncatus*, *Hope* : *diversus*, *Walker.*

Family *Megymenida.*

Megymenum, *Guér.*—*inermis* (As., N. I.), *Sch.*

Family *Mictida.*

Brachytes, *West.*—*bicolor* (Bom., N. I.), *West.*

Dalader, *Serv.*—*acuticosta* (As., N. I., Bur.), *Serv.* : *planiventris* (As.), *Hope.*

Trematocoris, *Mayr.*—*grossa* (As.), *calcar*, *Dall.* : *dentipes*, *Serv.* : *notatipes*, *patulicollis* *subvittata*, *Walker.*

Derepteryx, *White*—*Hardwickii* (Nep., As.), *Grayii* (Nep., As.), *White.*

Helcomeria, *Sign.*—*spinosa* (As.), *Sign.*

Prionolomia, *Sign.*—*fulvicornis* (As.), *Fabr.* : *biplagiata* (As.), *Walk.* : *gigas* (As.), *Dist.*

Anoplocnemis, *Sign.*—*phasiana* (As.), *Fabr.* : *compressa* (N. I., As.), *Dall.*

Mictis, *Leach.*—*nigricornis* (As.), *gallina* (As., Bur.), *Dall.* : *fasciata*, *albiditarsis* (Nep.), *Hope* : *dentipes*. *Serv.* : *umbilicata* (As.), *Sch.* : *nigrorufa* (As.), *ferrifera*, *amplectens*, *Walk.* : *tenebrosa* (As., Bur.), *heros* (As.), *pictor* (As.), *Fabr.* : *protracta*, *Schaum.*

Notobitus, *Stål.*—*Meleagris* (As.), *Fabr.* : *marginalis* (As.), *Hope* : *serripes* (As.), *Dall.* : *excellens* (As.), *Dist.*

Cloesmus, *Stål.*—*nepalensis* (Nep., As.), *Hope* : *brevicornis* (As.), *Sch.*

Physomerus, *Burm.*—*calcar* (As., Bur.), *grossipes*, *Fabr.* : *parvulus* (N. I.), *Dall.*

Family *Homocorida.*

Homocerus, *Burm.*—*angulatus* (Mad.), *2-guttatus* (N. I., As.), *Dall.*, *Hope* : *albiventris*, *macula*, *Dall.* : *fascifer* (As.), *Stål.* : *unipunctatus* (As.), *Thunb.* : *graminis abbreviatus*, *Fabr.* : *anticus*, *minax*, *Walker* : *prominulus* (A. I.), *Dall.*

Ornytus, *Dall.*—*brevicornis* (N. I.), *Dall.*

Family *Anisocelida*.

Serinetha, *Spin.*—augur (Bom., Ben., Bur.), abdominalis (Bom., Ben., Bur.), *Fabr.*: corniculata, *Stål.*

Lybas, *Dall.*—obscurus (As.), *Dall.*

Leptoglossus, *Sign.*—membranaceus (As.), *Fabr.*

Family *Alydida*.

Euthetus, *Dall.*—pulchellus (N. I.), *Dall.*

Camtopus, *Serv.*—linearis (Bom.), pedestris (As., Bur.), *Fabr.*: ventralis (Bom.), *Hope.*

Family *Stenocephalida*.

Leptocorisa, *Latr.*—varicornis (In.), angustatus, *Fabr.*

Family *Coreida*.

Metacanthus, *Costa*—pulchellus (N. I.), *Dall.*

Cletus, *Stål.*—calumniator (As.), hastatus (Mad.), *Fabr.*: punctulatus (As., N. I.), bipunctatus (N. I.), *Hope*: signatus (N. I.), pallescens inconspicuous conspicuus, *Walker.*

Ceratopachys, *West.*—vicinus (N. I.), variabilis (N. I.), *Dall.*

Cletomorpha, *Stål.*—denticulata (As.), *Stål.*

Clavigralla, *Spin.*—gibbosa (Bom.), *Spin.*

Acanthocoris, *Serv.*—scabrator (As., Bur.), *Fabr.*

Petalocnemis, *Stål.*—obscurus (As.), *Dall.*

Family *Rhopalida*.

Rhopalus, *Schill.*—bengalensis, *Dall.*

Family *Lygaeida*.

Bochrus, *Stål.*—foveatus (As.), *Dist.*

Lygæus, *Fabr.*—nigriceps (As.), maculatus (N. I.), bipunctatus, guttiger (N. I.), *Dall.*: militaris (N. I.), familiaris (As., Bom.), mendicus, *Fabr.*: pacificus, *Boisd.*: grandis, *Gray*: argentatus (As.), *Stål.*: inæqualis (As.), semiruber, *Walker.*

Graptostethus, *Sign.*—servus (As.), *Fabr.*: 3-signatus (As.), 4-signatus (As.), *Dist.*

- Arocatus*, *Spin.*—*pusillus*, *Dall.*: *pilosulus* (*Marri*), *Dist.*
Beocus, *Serv.*—*uniguttatus* (*As.*), *Thunb.*
Lethæus, *Dall.*—*sindicus* (*N. I.*), *Dall.*
Aphanus, *Lap.*—*indicus* (*N. I.*), *Dall.*
Pachymerus, *Serv.*—*sordidus* (*As.*, *N. I.*) *Fabr.*: *anticus* (*As.*),
Walker.
Rhyparochromus, *Curtis*—*pallens* (*N. I.*), *bengalensis*, *assimilis*
(*Bom*), *pallicornis*, *gutta* (*N. I.*), *Dall.*:
leucospilus (*As.*), *semilucens* (*N. I.*), *anti-*
cus, *Walker.*
Ischnodemus, *Fieb.*—*punctatus* (*N. I.*), *Walker.*

Family *Pyrrhocoridae.*

- Lohita*, *Serv.*—*grandis* (*As.*, *Bur.*), *Gray*: *longissima* (*As.*),
Stål.
Physopelta, *Serv.*—*gutta* (*As.*, *Bur.*), *Burm.*: *Schlanbuschii* (*As.*),
Fabr.: *cincticollis*, *Stål*: *apicalis*, *plana*,
bimaculata, *Walker.*
Iphita, *Stål.*—*limbata* (*As.*, *Bur.*), *Stål.*
Antilochus, *Stål.*—*russus* (*As.*, *Bur.*), *Stål.*: *Coquebertii* (*As.*,
Bur.), *Fabr.*
Odontopus, *Latr.*—*sanguinolens*, *Serv.*: *nigricornis* (*As.*, *Bur.*),
russus, *Stål*: *varicornis* (*As.*). *Fabr.*: *scu-*
tellaris (*N. I.*), *Walker.*
Ectatops, *Serv.*—*limbatus* (*As.*), *Serv.*: *lateralis* (*As.*), *distinctus*
(*As.*), *de Vuill.*
Melamphaus, *Serv.*—*faber* (*As.*), *Fabr.*: *rubrocinctus* (*As.*), *Stål*:
femoratus (*N. I.*), *Walker.*
Dindymus, *Serv.*—*rubiginosus* (*As.*, *Bur.*), *sanguineus*, *Fabr.*:
ovalis, *lanius* (*As.*), *Stål.*
Pyrrhocoria, *Fall.*—*vittiventris* (*As.*), *Walk.*: *grandis*, *Gray.*
Dysdercus, *Serv.*—*cingulatus* (*As.*, *Bur.*), *Fabr.*

Family *Phymatida.*

- Amblythyreus*, *West.*—*angustus* (*As.*), *quadratus*, *West.*
Tingis, *Fieb.*—*crossa*, *Walker.*

Family *Brachyrhynchida*.

Brachyrhynchus, *Lap.*—*membranaceus* (As.), *Fabr* : *orientalis* (In.), *de Lap.*

Crimia, *Serv.*—*rubescens*, *Walker.*

Family *Holoptilida*.

Maotys, *Serv.*—*viverra*, *Westwood.*

Family *Capsida*.

Phytocoris, *Fall.*—*Stoliczkanus* (Marri), *Dist.*

Calocoris, *Stål.*—*Stoliczkanus* (Marri), *Dist.*

Capsus, *Fabr.*—*partitus* (N. I.), *stramineus* (N. I.), *patulus* (N. I.), *Walker.*

Family *Reduvida*.

Isyndus, *Stål.*—*heros* (As.), *Fabr.*

Endochus, *Stål.*—*famulus* (As.), *Stål.*

Euagoras, *Burm.*—*plagiatus* (As., Bur), *Burm.*

Sycanus, *Serv.*—*collaris* (As.), *Fabr.*

Velinus, *Stål.*—*annulatus* (As.), *Dist.*

Cosmolestes, *Dist.*—*annulipes* (As.), *Dist.*

Reduvius, *Fabr.*—*marginellus* (As.), *Fabr.* : *nigricollis* (As.), *Dall.* : *mendicus* (As., Bur.), *costalis* (As.), *pulchri-ventris* (As.), *Stål.* : *Reuteri* (Sd.), *Dist.* : *rivulosus* (As.), *perpusillus* (N. I.), *singularis*, *Walker.*

Petalochirus, *Burm.*—*malayus*, *Stål.* : *singularis*, *Walker.*

Lophocephala, *Lap.*—*Guerini* (Bom.), *Lap.*

Opistoplatys, *West.*—*indicus*, *Walker.*

Family *Ectrichodida*.

Vilius, *Serv.*—*melanopterus* (As.), *Stål.*

Ectrichodia, *Lep.*—*tuberculatus* (As.), *maculiventris*, *Stål.* : *discrepans* (In.), *insignis*, *umbifera*, *Walker.* : *crudelis* (N. I.), *nigripennis*, *Fabr.*

Ectrichotes, *Sch.*—*pilicornis* (As., Mad.), *Fabr.*

Family *Piratidæ*.

Pirates, *Burm.*—*atro-maculatus* (As.), *cyaneus*, *quadriguttatus*, *ochropterus*, *cordiger*, *granulatus*, *Stål*: *punctus*, *quadrinotatus*, *Fabr*: *cordatus*, *lepturoides* (N. I.), *Wolf*: *adjunctus*, (N. I.), *posticus* (N. I.), *sexmaculatus*, *strigifer*, *basiger* (N. I.), *decisus* (N. I.) *instabilis* (N. I.), *latifer*, *mutilloides* (As.), *naboides*, *bipunctatus*, *Walker*: *piotus*, *Schaum*.

Lestomerus, *Serv.*—*affinis* (As.), *Serv.*: *flavipes* (N. I.), *diffinis*, *Walker*: *sanctus*, *Stoll*.

Catamiarus, *Serv.*—*brevipennis* (In.), *Serv.*

Androclus, *Stål.*—*granulatus* (As.), *Serv.*

Family *Acanthaspidæ*.

Sminthus, *Stål.*—*fuscipennis* (As.), *marginellus*, *Dist.*

Acanthaspis, *Serv.*—*5-spinosa* (As.), *6-guttata* *Fabr.*: *helluo* (As.), *cincticus* (As.), *pedestris* (Mad.), *concinna* (Dec.), *biguttula*, *bistillata*, (As.), *rugulosa* (N. I.), *ornata*, *Stål*: *fulvipes* (As.), *Dall.*: *tergemina*, *Stoll.*: *unifasciata*, *Wolf.*: *quadrinotata*, *luteipes* (N. I.), *megaspilus*, *dubius*, *micrographa* (N. I.), *Walker*.

Pachynomus, *Klug.*—*biguttatus*, *Stål.*

Prostemma, *deLap.*—*carduelis*, *Dohrn*: *placens*, *Walker*.

Family *Stenopodidæ*.

Oncocephalus, *Klug.*—*annulipes* (As.), *Stål.*: *naboides* (Mad.), *Walker*.

Stenopoda, *deLap.*—*hastata* (N. I.), *Walker*.

Pygolampis, *Germar.*—*unicolor* (N. I.), *concolor*, *Walker*.

Family *Apioneridæ*.

Sycanus, *Serv.*—*collaris* (In.), *Stoll.*: *versicolor* (Ben.), *croceovittatus*, *Dohrn*: *indagator*, *depressus*, *Stål.*: *pyrrhomelas*, *semimarginatus* (As.), *Walker*.

Harpactor, de Lap.—*pulchrivertris* (N. I.), *costalis*, (Ben.),
Stål: *obscurus* (As.), *nigricollis* (As.), *Dall.*:
fuscipes, *Stoll.*

Euagoras, Burm.—*famulus*, *atrispinus*, *dichrous* (As.), *cons-*
persus Stål.

Family *Emesidae.*

Emesa, Fabr.—*flum*, *Fabr.*

Family *Gerridae.*

Gerris, Latr.—*fossarum*, *Fabr.*

Ptilomera, Serv.—*laticauda* (As., Bur.), *Hard.*

Family *Belostomatidae.*

Belostoma, Latr.—*indica* (As., Bur.), *Serv.*

Sphærodema, Lap.—*annulatum*, *Fabr.*

Family *Nepidae.*

Ranatra, Fabr.—*elongata*, *filiformis*, *Fabr.*: *macrophthalma*,
Walker.

Lacotrepes, Stål.—*ruber* (As.), *Linn.*: *japonensis* (As.), *Scott.*:
robustus (As.), *Stål.*

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II.—HEMIPTERA-HOMOPTERA.

I.—Cicadina.

Family—*STRIDULANTIA.*—*Cicadas.*

Polynœura, West.—*ducalis* (Nep.), *West.*

Platylœura, Serv.—*phalœnoides* (In.), *Sphinx* (N. I.), *cervina*
 (N. I.), *straminea* (N. I.), *interna*, *Walk.*,
andamana, *Dist.*

Oxyplœura, Serv.—*sanguifluis* (N. I.), *basialba* (N. I.), *Bufo*, *Walk.*

Tacua, Serv.—*speciosa, Ill.*

Tosena, Serv.—*melanoptera (As., N. I.), White: Mearesiana (Him.), West.: splendida (As.), albata (N. I.), Dist.*

Huechys, Serv.—*phalsemata (As., N. I., Bur.), splendidula (As., N. I.), Fabr.: 8-notata (A.), West.: transversa, Walk.*

Gseana, Serv.—*sulphurea [=pulchella, West.], (N. I.), Hope: dives (As.), West.*

Mogannia, Serv.—*illustrata (N. I.), Serv.: recta, obliqua, Locusta, lacteipennis (N. I.), quadrimaculata (N. I.), Terpsichore, Walk.*

Dundubia, Serv.—*obtecta (N. I.), Fabr.: vaginata (As.), Serv.: cinctimanus (As.), ramifera (As.), vibrans (As.), microdon (N. I.), lateralis (As.), Urania, Nicomache (N. I.), tigrina (Mad.), maculipes (N. I.), Samia (N. I.), varians (As.), saturata (As.), singularis, linearis (As.), Walk.: Radha (Mad.), Tripurasura (As.), Distant.*

Cosmopsaltria, Distant—*Pomponia, Tibicen, Stdl: Sita (Bom.), Durga (As.), Kama (Darj.), Madhava (As.), Aurungzebe (Bom.), Distant.*

Cicada, Linn.—*subtincta (As.), Arsa (N. I.), acorata (N. I.), subvitta (N. I.), xantes (N. I.), Walk.: apicalis (N. I.), Germ.: hemiptera, maculicollis (Ben.), Guér.: imperatoria (Nep.), West.*

Fidicina, Serv.—*vicina (As.), Sign.: recta (As.), oovus (As.), immaculata (Ben.), Walk.*

Family *Cercopidae.*

Cercopis, Serv.—*nigripeennis (As. N. I.), Fabr.: signifera (As.), ducens (As.), pallida, dorsalis (N. I.), dorsimacula (N. Ben.), undata (As.), dorsivitta (N. I.), humeralis (As.), costalis (Mad.), hilaris (Mad.), basiclava (N. I.), egens (As.), pudens (N. I.), dubitabilis (N. I.), rotundata (N. I.), amplicollis (N. I.), decisa (Darj.), Walk.: bispecularis (N. I.), White: Strongii, West.*

Cosmoscarta, *Stål*—*borealis* (As.), *andamana*, *Moorei* (As.),
Distant.

Phymatostetha, *Stål*—*binotata* (Sadiya), *Distant*.

Tomaspis, *Serv.*—(Moneophora) *trimacula*, (Sphenorhina)
contigua (N. I.), *intermedia* (N. I.),
proxima (N. I.), *approximans* (N. I.),
Walk.

Ptyelus, *Serv.*—*nebulosus*, *Fabr.*: *costalis* (N. I.), *conifer*, *quad-*
ridens (N. I.), *guttifer* (N. B.), *sexvitta-*
tus (N. I.), *punctus* (N. B.), *subfasciatus*
(N. I.), *Walk*.

Aphrophora, *Germ.*—*sigillifera* (N. I.), *Walk*.

Family *Jassidae*.

Oxyrhachis, *Germ.*—*tarandus* (N. I.), *subjecta*, *unicolor*, *rudis*
(N. B.), *Walk*.

Hypsauchenia, *Germ.*—*Hardwickii* (N. B.), *Fairm.*

Centrotus, *Fabr.*—*flexuosus scutellaris*, *Fabr.*: *Dama*, *Germ.*:
Gazella, *Hoff.*: *assamensis*, *Fairm.*:
reponens (N. B.), *substitutus* (N. B.),
pilosus (N. I.), *Walk.*: *Paria* (N. B.),
Lef.

Penthimia, *Germ.*—*orientalis* (N. I.), *compacta* (N. I.),
Walk.

Ledra, *Fabr.*—*aurita*, *Fabr.*: *dorsalis* (As.), *dilatata*, *plana*, *scu-*
tellata, *fornicata* (N. I.), *carinata* (N. B.),
punctata (Mad.), *chlorocephalus* (N. I.),
culobata, *lineata* (N. I.), *punctifera* (Darj.),
obligens (N. I.), *Walk*.

Epiclines, *Serv.*—*planata*, *Serv.*

Tettigonia, *Germ.*—*opponens* (N. I.), *extrema* (N. I.), *bella*
(N. I.), *jactans* (N. I.) *Walk.*: *ferruginea*
(As.), *Fabr.*: *rubromaculata* (Nep.), *Pavo*
(Ben.), *quadrilobata* (Nil.), *semicircularis*
(Mad.), *unimaculata* (Cal.), *Sign.*

Jassus, *Fabr.*—(Caldia) *indica* (N. I.), *Walk.*

Family *Fulgoridae*.

Laternaria, Linn.—*Curtiprora* (As.), *cardinalis* (Nep.), *Butler*.

Fulgora, Linn.—(*Hotinus*) *candelaria* (As.), Linn.: *maculata*,
Oliv.: *guttulata* (In.), *virescens* (As.),
viridirostris (As.), *Spinolæ* (Mad., As.),
clavata (As. N. I.), *geminata* (Him.), *West.*:
Delessertii (Mad.), *subocellata* [var. *oculatus*, *West.*], (Mad.), *Guér.*: *pyrorrhinoha*,
(Nep.) *Donov.*: *ponderosa* (As.), *Stål.*:
brevirostris (As.) *Butler.*: *andamaensis*,
Distant.

Pyrops, *Serv.*—*punctata* (As. Nep.), *Spin.*: *guttulata* (As.), *virescens* (As.), *West.*: *perpusilla* (N. B.), *Walk.*

Cyrene, *West.*—*fusiformis* (As.), *Walk.*

Aphana, *Guér.*—*festiva*, *Fabr.*: *atomaria* (N. I.), *Burm.*: *amabilis* (As.), *Hope.*: *Saundersii*, *imperialis* (As.), *White.*: *Caja* (As.), *submaculata* (As.), *basirufa* (As.), *Io* (N. I.), *albiflos* (Mad.), *dives* (Mad.), *delectabilis* (N. I.), *lectissima* (N. I.), *placabilis*, *verisamor* (As.), *Walk.*: *sanguinipes* (As.), *Stål.*

Episcius, *Spin.*—*Guerinii*, *Spin.*

Polydictya, *Guér.*—*basalis* (As.), *Guér.*: *tricolor* (Mad., N. I.), *Walk.*

Lystra, *Fabr.*—*dimidiata* (As.), *punicea* (As.), *Hope.*: *Westwoodii* (As.), *Parry.*

Eurybrachys, *Guér.*—*Lepelletieri* (Ben.), *Guér.*: *spinosa*, *Burm.*: *insignis* (Mad.), *West.*: *æruginea* (N. I.), *pulverosa* (As.), *reversa* (As.), *Hope.*: *decora* (As.), *punctifera* (Mad.), *tricolor* (N. I.), *subfasciata* (N. I.), *Walk.*

Dichoptera, *Spin.*—*hyalinata* (Ben.), *Fabr.*

Dictyophora, *Germ.*—*graminea*, *Fabr.*: *lineata* (Ben.), *pallida* (Ben.), *Donov.*: *indiana*, *despecta* (Mad.), *nigrimacula* (N. I.), *albivitta* (N. B.), *pallida* (N. I.), *leptorhina*, *Walk.*

Cixius, *Latr.*—*flaviflignus* (N. I.), *Müller.*, *Walk.*

Helicoptera, *Serv.*—indica (Mad.), flabria (As.), ferruginea, *Walk.*
Derbe, *Fabr.*—mæsta (N. I.), carnosæ (N. I.), *West.*

Elasmoscelis, *Spin.*—fuscofasciata (As.), *Stål.*

Issus, *Fabr.*—pectinipennis (Ben.), *Guér.*: apicalis (N. I.), *Walk.*

Flata, *Fabr.*—limbata (N. I.), *Fabr.*: marginella (As.), *Oliv.*:
bombycoides (Mad.), *Guér.*: intacta (As.),
completa (As.), tenella, *Walk.*

Pochazia, *Serv.*—obscura, *Guér.*: guttifera (As.), interrupta
(Mad.), simulans (N. I.), *Walk.*

Flatoides, *Guér.*—orientis, truncatus (N. I.), *Walk.*

Colobesthes, *Serv.*—coromandelica, *Spin.*: conspersa (As.), *Walk.*

Pæciloptera, *Latr.*—truncata (N. B.), *Linn.*: ferrugata, *Fabr.*:
dentifrons, *Guér.*: comma (As.), lactifera
(N. I.), ocellata (Mad.), Antica, intracta
(Panj.), lutescens (N. I.), *Walk.*: Maria
(As.), tricolor (As.), *White*: vidua (As.), *Stål.*

II.—PHYTOPHTHIREÆ.

Family *Psyllida.*

Psylla, *Först.*—basalis (N. I.), *Walk.*

Family.—APHIDINA: plant-lice, apparently not examined.

Family *Coccida.*

Coccus, *Linn.*—Lacca (In.), *Kerr*: cacti (In.), *Linn.*

Ceroplastes, *Gray.*—ceriferus (Mad.), *Fabr.*

Monophlebus, *Leach.*—atripennis, *Klug*: Leachii (Mad.), Saundersii (S. In.), *West.*

III.—ANOPLURA—Lice.

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NEUROPTERA.

The order Neuroptera [nerve-winged] includes those insects commonly known as white-ants, May-flies, dragon-flies, scorpion-flies and ant-lions. "Of all the Linnæan orders," writes Mr. Kirby, "this appears to consist of the most discordant tribes: so that it seems next to impossible to construct a definition that will include

Neuroptera. them all, unless indeed that a varied metamorphosis is its essential character: or, to speak more largely, variety itself seems the characteristic of the insects composing it in every state, and there is scarcely a common distinctive character in their perfect state upon detecting which in any individual you may exclaim—this is a neuropterous insect." The insects of this order may, however, be distinguished from the Orthoptera and Hemiptera by the homogeneous texture of their wings; from the Hymenoptera by their oral arrangements; from the Lepidoptera by the absence of scales on the wings, and from the Diptera by the possession of four wings. The wings are membranous and transparent and are marked with nervures so arranged as to resemble fine network. The mouth is formed for bruising the food on which the insects live and is never adapted for sucking the juices of plants or animals. The abdomen does not possess a sting and is rarely furnished with an ovipositor. The antennæ are many-jointed and hair-like, and the eyes are simple. The thorax is composed of three segments closely united together and the abdomen is attached to the thorax by its whole breadth. The insects of this order are usually divided into four classes—(1) *Pseudo-neuroptera*; (2) *Odonata*; (3) *Planipennia*; and (4) *Phryganina*, the last of which forms in some systems a separate order under the name *Trichoptera*. To the first class belong the *Termitina* or white-ants, of which no description is necessary to residents in India. They comprise males, females, and neuters, and live in societies and are omnivorous eaters in all states. In the *Ephemerina* or May-flies the mouth is entirely membranous or very short, and the posterior wings are sometimes wanting. They live in the perfect state seldom more than twenty-four hours. The *Odonata* include the great family of dragon-flies of which the larvæ and nymphs are aquatic. The *Planipennia* include the scorpion-flies in which the head is prolonged or narrowed in the form of a proboscis; the ant-lions in which the

head is not so prolonged and the aphid-lions somewhat similar to the preceding. Though the ant-lions in their perfect state approach in form the dragon-flies, they differ much in the character of their metamorphosis. The Myrmelions undergo a complete metamorphosis and their larvæ are terrestrial in their habits and of a short stout and thick form. They usually construct a cocoon when about to undergo the change to the pupa state in which they are for the most part quiescent. In the perfect insects, the wings have fewer nervures than the dragon-flies, their eyes also are smaller and the antennæ are many-jointed. The mandibles are sharp and the maxillæ and lower lips have palpi attached to them. The female dragon-fly lays her eggs on the water in which the young larvæ are hatched and also undergo the change to the pupa state. In both states they are very active and breathe through the intestine which admits water and with it air mechanically suspended which is taken up by the tracheæ of the intestines. Although they can only walk slowly, they manage to elude their enemies by expelling the water in their intestine with such violence as to carry them a considerable distance. The genus *Hemerobius* are miniature ant-lions and prey on the Aphides in the same manner that the Myrmelions prey on ants and other insects. The scorpion-flies have a long proboscis and are in the habit of erecting the last segments of the abdomen somewhat in the manner of a scorpion. The caddis-flies in the larvæ state form tubes of all sorts of substances within which they move about. Some of the sections of this order have been fairly worked, but very much more remains to be done.

NEUROPTERA.

I.—PSEUDO-NEUROPTERA.

Family *Termitina*—White-ants.

Termes, *Lin.*—*obesus* (In.), *Mauricianus*, *Ramb.*: *taprobanes*, *Walk.*: *ferruginosus*, *Latr.*: *brunneus*, *fatalis*, *Hagen.*

Family *Embiidina*.

Embia, *Latr.*—*Latreillei* (Bon.), *Ramb.*

Oligotoma, *West.*—*Saundersii* (Ben.), *West.*

Family *Perlina*.

Perla, *Geoff.*—*suffusa* (Nep.), *Walk.*: *Divaucelii*, *Pictet.*

Isagonus, *New.*—*infuscatus* (N. I.), *New.*

Family *Ephemerina*—May-flies.

Polymitarcys, *Eaton*—*indicus* (N. I., Bom.), *Pictet.*

Palingenia, *West.*—*lata* (As.), *Walk.*

Ephemera, *Linn.*—*immaculata*, *Eaton*: *expectans*, *Walker*:

Bætis, *Leach*: *debilis*, *Walker.*

II.—ODONATA.

AGRIONINA.—Water nymphs.

Calopteryx, *Leach.*—*gracilis* (Bom.), *Ramb.*: *smaragdina*, *basilaris*, *De Selys*: *sinensis*, *Linn.*: *ciliata* (As.), *Fabr.*

Euphæa, *De Selys.*—*dispar*, *Ramb.*: *lestoides*, *indica*, *De Selys*: *splendens* *Hagen.*

Rhinocypha, *Ramb.*—*trimaculata*, *unimaculata*, *trifaciata*, *quadrimaculata* *De Selys*: *bisignata*, *Hagen*: *fenestrella*, *Ramb.*: *lineatus*, *Burm.*

Lestes, *Leach.*—*viridula* (Bom.), *platystyla*, *Ramb.*

Argia, *Ramb.*—*quadrimaculata* (Bom.), *gomphoides* (Mad.), *Ramb.*

Agriion, *Fabr.*—*decorum* (Bom.), *microcephalum* (Bom.), *cerinum* (Bom.), *Ramb.*

GOMPHINA.

Diostatomma, *Charp.*—*rapax* (Bom.), *Ramb.*

ÆSCHNINA.

Anax, *Leach.*—*immaculifrons*, *Ramb.*

LIBELLULINA.—Dragon-flies.

Zygomma, *Ramb.*—*petiolatam* (Bom.), *Ramb.*

Neurothemis, *Brauer.*—*Sophronia* (Mal.), *fulvia* (Mal.), *Drury*: *pallida*, *Ramb.*

Adesma, *Ramb.*—*paucipennis* (Bom.), *Ramb.*

Libellula, *Lin.*—*stylata* (Bom.), *geminata* (Bom.), *intormedia*, (Bom.), *festiva* (Bom.), *Caesia* (Bom.), *truncatula* (Bom.), *trivialis* (Bom.), *obscura*, *Ramb.*: *Tikarga* (Mad.), *equestris* (Bom.), *lineata*, *Braminea*, *contaminata* (Mal.), *Fabr.*: *variegata*, *Lin.*: *Sabina* (Bom.)
Drury.

III.—PLANIPENNIA.

Family *Sialina*.

Hermes, *Gray.*—*maculipennis* (Mad.), *Gray.*

Chauliodes, *Latr.*—*simplex* (As.), *Walk.*: *subfasciatus* (As.),
West.: *pusillus*, *M Lach.*

Neuromus, *Ramb.*—*infectus* (Darj.), *montanus* (Sik.), *fenestralis* (Darj.), *latratus* (As.), *intimus*, *M Lach.*: *testaceus* (As.); *albipennis* (Nop.), *Walk.*

Family *Hemerobina*—Ant-lions, aphid-lions.

Rapesma, *M Lach.*—*viridipennis*, *Walk.*

Mantispa, *Ill.*—*nodosa* (As.), *quadrītuberculata* (N. I.) *lincolata* (Nop.), *indica* (Nep.), *West.*: *rufescens* (Mad.), *Latr.*: *Cora* (Mad.), *New.*

Osmylus, *Latr.*—*conspersus*, *tuberculatus*, *Walk.*

Chrysopa, *Leach*—*infecta* (Mad.), *New.*: *candida*, *Fabr.*

Palparea, *Hagen*—*patiens* (N. I.), *infirmus* (N. I.), *Walker*: *parvus* (N. I.); *zobratus* (N. I.);

Macronemurus, *Hagen*—*nefandus* (N. I.), *Walker.*

Stenares, *Hagen*—*improbus* (N. I.), *Walker.*

Formicaleo, *Hagen*—*audax* (Nep.), *verendu* (N. I.), *vosanus* (N. I.), *minax* (N. I.), *pugnax* (N. I.), *dirus* (N. I.), *truculentus* (N. I.), *Tappa* (Nep.), *Walker.*

Acanthaclisi, *Hagen*—*inclusa* (N. I.), *Walker.*

Croagris, *Hagen*—*perfidus* (N. I.), *Walker.*

Glenurus, *Hagen*—*infestus* (N. I.), *tacitus*, *Walker.*

Myrmecolurus, *Hagen*—*acerbus* (N. I.), *implexus* (N. I.),
Walker.

Myrmeleon, *Linn.*—*infensus* (N. I.), *morosus* (N. I.), *Walker*.
Tomateres, *Hagen*—*pardalis* (Mad.), *Fabr.*: *astutus* (N. I.),
Walker.

Idricerus, *M'Lach.*—*decrepitus* (N. I.), *Walker*: *obscurus*, *West*.

Siphlocerus, *M'Lach.*—*nimius* (N. Ben.), *Walker*.

Helicomitus, *M'Lach.*—*insimulans* (N. I.), *immotus* (N. I.),
dicax (N. I.), *verbosus* (N. Ben.), *profanus*
(N. I.), *Walker*.

Ogcogaster, *West.*—*tessellata*, *segmentator* (N. I.), *West*.

Acheron, *Lef.*—*longus* (Ben.), *Walker*.

Hybris, *Lef.*—*angulata* (As), *Westwood*.

Glyptobasis, *M'Lach.*—*dentifera* (Bom., N. I.), *West*.

Ascalaphodes, *M'Lach.*—*canifrons*, *West*.

Family *Panorpina*—Scorpion-flies.

Bittacus, *Jatr.*—*indicus*, *Walk*.

Panorpa, *Linn.*—*Charpentieri* (In.), *Burm.*: *appendiculata*
(Mad.), *West.*: *furcata* (Nep.), *Hard*.

Family *Nematoptera*.

Nematoptera, *Burm.*—*flipennis* (Cen. In.), *West*.

IV.—PHRYGANINA

Family *Hydropsychina*—Caddis-flies.

Hydropsyche, *Pict.*—*hyalina*, *Pict.*: *multifaria* (Mad.), *Walk*.

Stenopsyche, *M'Lach.*—*griseipennis*, *M'Lach*.

Family *Leptocerina*.

Dinarthrium, *M'Lach.*—*ferox*, *M'Lach*.

Setodes, *Rambur.*—*argentifera*, *M'Lach*.

Leptocerus, *Leach*—*indicus* (N. Ben.), *Walk*.

Polymorphanus, *Walk.*—*nigricornis* (N. I.), *Walk*.

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LEPIDOPTERA.

The order Lepidoptera (scale-winged) comprises those insects so well known under the names butterflies and moths. In this order the metamorphosis is complete and the change to the pupa and imago states is well marked. The body comprises the head, thorax and abdomen. The head is furnished with a suctorial apparatus, eyes and antennæ. The mouth consists of filaments or threads united together to form a trunk or tube representing the maxillæ of other insects and adapted for sucking the juices on which the perfect insect lives. The base of the trunk is protected by two palpi corresponding to the labial palpi of other insects and the maxillary palpi are small and sub-obsolete in many species. The labrum also is small, conical or sub-ulate, and the labium is composed of a single piece, flat and triangular. The mandibles are very small and rudimentary and are in some species sub-obsolete. The true eyes are compound, but occasionally there are two ocelli between them. The antennæ vary much in form in different groups. In the diurnal tribes they terminate in a knob, hence the name *Rhopalocera* (knob-horned): in the crepuscular groups they are usually fusiform, and in the nocturnal they are thread-like or hair-like and assume various forms, hence the name *Heterocera*. In the last group some are pectinated like the teeth of a comb; others are plumose like a tuft of feathers; and others again are branched. The three segments of the thorax are in appearance one and carry on the upper side the organs of flight and on the under side the legs. The abdomen is attached to the thorax by only a portion of its breadth and is not furnished with either a sting or an ovipositor. The scales which bear the colouring matter are attached to the frame-work of the wings by a stalk or pedicel and are laid on somewhat like the tiles on a roof. In form the scales are usually

rounded towards the pedicel and truncated at the outer edge with a toothed border. Amongst the diurnal Lepidoptera, the wings in repose are usually folded perpendicularly, and amongst the crepuscular and nocturnal groups the wings are folded horizontally. The legs are six in number and the tarsi are five-jointed and have a pair of hooks at the end. The first pair of legs are in many species rudimentary and of no apparent use, except perhaps to clean the front of the head and the trunk. The caterpillars or larvæ possess twelve segments or articulations which are furnished beneath on the anterior segments with three short scaly legs, terminating in a cushion surrounded by hooks and on the posterior segments with from four to ten false legs. These larvæ feed on vegetable substances and before the transformation into the imago state change to a pupa or chrysalis, in which the limbs, thorax and abdomen of the imago may be seen. The corneous envelope of the chrysalis varies much in form. In *Danais chrysippus* it is of a grass-green or pink colour adorned with small spots of gold and is attached by a pedicel to its food plant. Other species form cocoons and others again bury themselves in the earth. The senses of touch, sight, hearing and smell are strongly developed, and the squeak of *Acherontia* when captured, though produced only by the air escaping from two cavities in the abdomen, may be likened to the fifth sense.

It is not so necessary to discuss the basis of classification, as the different families are sufficiently distinguished in the works quoted in the 'References' at foot. The great families

Butterflies.

of which representatives are found in the Kumaon Himālaya are the *Nymphalidae*, *Lemoniidae*, *Lycanidae*, *Papilionidae* and *Hesperidae*. The *Nymphalidae* are numerous both in genera and species and many are distinguished by the strength of their wings and their steady, swift flight. The Purple Emperor and the Fritillaries of British collectors belong to this family. For the most part, the insect in the pupa state is attached by a pedicel and has not the support of the slight skein of thread passed round the body which is noticed in other families. The fore-legs also are imperfect and unfitted for walking. In the *Lemoniidae* the chrysalis is attached by a slender thread across the body. They are chiefly natives of tropical America, and in these hills but four genera have been captured by me,

of which, moreover, there are few species. The *Lycanida* are numerous in genera and species and include the Blues, Coppers and Hair-streaks of the British collectors. In this family the chrysalis is attached by the tail and girt by a silk thread across the body. The *Papilionida* include the true *Papilionida* or swallow-tails and the *Pierida* or whites. The former are always known by the apparently four-branched nervule and the spur on the anterior tibiae. The pupa is braced or sub-folliculate and varies much in form. It never has the head pointed as in the *Pierida*. In India the latter family hardly bears out its English name: some, like *P. Nabellica*, are nearly black: others are blue, or are adorned with red, crimson, chrome, yellow or orange colours. The *Hesperida* or skippers are very numerous in species and individuals. The pupa is attached by the tail and is supported by a skein of thread around the body. This family is also marked by the possession of a pair of spurs on the middle of the hind tibiae, and in India many species are adorned with bright colours.

The differentiation of the genera is chiefly based on the form of the legs and the form and neurulation of the wings.¹ A clear appreciation of the position and nomenclature of the neurulation of the wings is essential to the understanding of any description of the diurnal Lepidoptera. It would, however, lead us too far away to enter into this subject here or to discuss the interesting anatomy and transformations of this order. We have not the materials for estimating exactly the number of species of Lepidoptera found in India, but in a large collection from Bengal examined in 1865, the *Rhopalocera* numbered 409 species and the *Heterocera* 1,207 species. The single collection of the late Mr. W. S. Atkinson, examined in 1880, added 650 new species of *Heterocera*; and if we take the numerous additions made by other collectors and the species recorded by others, we have about 900 species of *Rhopalocera* and about 2,500 species of *Heterocera*, chiefly from the Bengal Presidency. The *Heterocera* of the north-west Himalaya have hardly been worked and no good list yet exists for this group. In the following lists the *Rhopalocera* represent, with few exceptions, actual captures in the tract between the Tons and the Sarda, the Duns and Bhábar by

¹ Heismann's description of the terminology of the Lepidoptera in Smithsonian Contributions to Knowledge, IV., N. C., 1865, is accurate and concise.

myself or others. The list of *Heterocera* contains also a number of typical species captured in Darjiling, Calcutta and western Assam, and sent me by the late Mr. W. S. Atkinson as an aid in determining species. It is to be regretted that my notes do not enable me to separate these from the species actually recorded from Upper India. This list can therefore only be taken as a record of species that may or may not occur in the tract for which the *Rhopalocera* list shows actual captures.

The *Heterocera* include both the crepuscular and nocturnal groups, and the list gives the families recorded as occurring in the Bengal Presidency.

Hawk-moths.
At the foot of the list of each family the genera are noticed which, though found in India, have not yet, with few exceptions, been identified as occurring in Upper India. The tribe Sphingæ or Hawk-moths affords numerous examples. They are easily recognized by their prismatic or fusiform antennæ, which are usually thickest in the middle and are terminated by a little flake of scales. They fly with great force and swiftness, so that it is most difficult to capture them uninjured, and are named from a supposed resemblance in the position usually assumed by the caterpillar to the attitude of thephinx. They pass their pupa stage in the ground. The tribe Bombycæ is also very well represented in India, but the space at our disposal will not allow us to note the very interesting families comprised in it, except the *Bombycida*, which from its economic value and the efforts now being made to localise sericulture in the Dehra Dûn demands and

Silk-moths.
deserves considerable attention. We shall first reproduce the late Captain Hutton's valuable note on the family which is but little known, and coming from a practical naturalist such as he was should have wider circulation. We shall then describe the different experiments that have been undertaken to ascertain whether silk culture can be made a profitable practical industry like indigo and tea.

Notes on the Bombycida, as at present known to us, by Captain Thomas Hutton.

Bombyx Mori, Linnaeus.—The largest of the domesticated Chinese Bombycæ, originally from China, about north latitude 25° to 26°. Also in Japan.

† Dated 25th July, 1871. So far as I am aware nothing has been discovered to invalidate the statements here made, and these 'Notes' may still be taken as a summary of our scientific knowledge of the silk-producing moths of India.

This has been cultivated in Europe, especially in France and Italy, as well as in Syria, Egypt, Persia, Bakhara, Afghanistan, Kashmir, in one or two localities of the Northern Panjáb, near the hills, and thrives well at Mussoree, everywhere feeding upon various species of mulberry and everywhere an annual, only except at Mussoree, where I can obtain two crops. This is the worm that lately failed in France after centuries of domestication. It occurs nowhere in the lowland Gangetic provinces, but its name is assigned, in ignorance, to all the under-mentioned species. This species has been introduced into Australia, where it is said to thrive well, although Dr. Wallace of Colchester has lately informed me that Australian eggs do not hatch so kindly and regularly in England as English-bred eggs; instead of coming forth in a swarm, they appear daily in small quantities only. This I attribute to the high temperature of Australia having acted injuriously upon the constitution, which is debilitated. The best silk of all is produced by this species, and readily sells, with good reeling, at 25 shillings per pound. Mr. Cope sold some at that rate which he produced in the Panjáb; and that reared at Mussoree fetched the same price. A splendid silk is produced by crossing this species upon the smaller monthly worm known in Bengal as the *desi*, but the crossing requires great attention, and the out-turn after all may not be worth the trouble, for, unless very closely watched and attended to, the worms will invariably revert to annuals. Silk—golden yellow when in health.

2. *Bombyx tatar*, Hutton.—This species is cultivated sparingly in several parts of India, but its constitution is thoroughly worn-out, and it ought to be sent to a hill climate. At Mussoree it thrives well, and although, like the last, an annual everywhere else, here it yields a second or autumnal crop also. It was originally brought from China, near Nankia, in north latitude 32°, but is fast fading away from Bengal. It is cultivated in France and Italy and in China, as well as in Bengal, and in those countries generally produces a pure white silk; in Italy there are more white than yellow cocoons, but in France more yellow than white; this is dependent upon climate, as is well shown at Mussoree, where worms introduced from Bengal produce white cocoons for the first crop, but almost all yellow in the second crop. The worm being northern is impatient of heat and suffers accordingly in constitution; the silk in consequence becoming white, which, as I have elsewhere pointed out, is generally a sign of loss of constitution, not only among silk-worms, but among animals still higher in the scale of nature; the natural colour of the worm of *B. Mori* is nearly black-brindie, whereas the worms under domestication are of a sickly creamy white. So, then, the climate of France, being more temperate than that of Italy, produces more yellow than white cocoons. This species is often termed the Milanese or Italian stock, and in Bengal is known as the *bara patu*, because its cocoon is larger than those of the so-called *desi* worms or polyvoltines. It is cultivated in Assam and, according to Dr. Boyle, is there and elsewhere called "Pat majer," although it is invariably confounded with *B. Mori*, than which it is at least an inch smaller, though in other respects closely resembling it. The cocoons are of a different texture with more stock. The silk varies in price from 15 to 25 shillings per pound. Unless it be very near transported to the hills, this species will certainly die out; here I could furnish its silk without difficulty.

3. *Bombyx Crassi*, Hutton.—This is the largest of the monthly worms, and in Bengal passes under the native name of the Madrasal or Nistri, and is as usual confounded by Europeans with *B. Mori*, although the one passes as an annual, and the other as a monthly worm. The silk is good, of a golden yellow, and the worms thrive best in a temperate climate; in Assam (sped. Royle) it is known as "*Pat minor*." This species is cultivated in several parts of India, and thrives well at Mussoorea. It is to be particularly remarked, however, that none of the Chinese species, whether annual or monthly, have hitherto succeeded in the North-Western Provinces; Dr Royle long since remarking that all the Old Company's plantations did not extend higher up the country than about 2° of north latitude, owing to the dry hot nature of the North-Western climates.

4. *Bombyx fortunatus*, Hutton.—Known to the Bengalis as the *desi* worm and, like the others, dignified by Europeans with the name of *B. Mori*. Silk—golden yellow, distributed over Bengal and other parts of Southern India; but people know so little of the distinguishing characters of species, that it becomes very difficult to say what species is alluded to in magistrates' reports, unless the native name is mentioned. This also is one of the polyvoltines. A sure mark of distinction between the worm of this species and that of any of the others exists in the fact that when near maturity it becomes of a dull leaden blue color. This species thrives best in the cold weather. It is very small, but yields a good cocoon, although the returns of silk are said to be uncertain; there are no dark worms observable among them. The worm is figured in the second part of my paper "*On the Reversion and Restoration of the Silkworm*."

5. *Bombyx sinensis*, Hutton.—This is known as the "*Stas*" of Bengal, but, like the others, it originally came from China; it is very prolific, and even at Mussoorea goes on yielding crop after crop up to the middle of December. The cocoons vary in colour, some being white and others yellow, while others even have a beautiful faint greenish hue. These changes clearly show that the health of the worm is becoming impaired. There is a peculiarity about these also which may enable the tyro to distinguish them from any of the others; while all the other species hatch slowly during the morning, from six to twelve o'clock, the *Stas* worms come forth all in a batch, and continue hatching all day and all night.

6. *Bombyx arracensis*, Hutton.—This I have only once been able to procure and the worms died off soon after hatching. The cocoon is said to be larger than those of the Bengal monthlies, but very little beyond the fact of its existence appears to be known. As the species is supposed to have been introduced from Burma, it may probably turn out to be the same as that which was lately reported to exist in Burma.

7. *Bombyx*—?—I have heard of a species which in Central India is said to yield three crops of silk in the year, and that as soon as they are hatched the worms are placed out upon mulberry trees and left there until they spin the cocoons. Some of the cocoons were kindly sent to me, but were so crushed in transit that they were destroyed; the cocoons were small, but the silk was good, of a pale ochraceous color, like that of *B. fortunatus*. The following, with the

exception of *B. Huttoni*, are little known. Mr. F. Moore wishes to place them in a separate genus under the name of "*Theophila*," one of his chief characters being the rows of spines on the larvæ; I object, however, to the establishment of this genus, because, in truth, we know little or nothing about them, and as to the spines, two species only are as yet known to possess them; nevertheless, they certainly do not stand properly under the genus *Bombys*, but we must wait yet awhile in order to ascertain whether all can be included in the same genus. (*B. Hersfeldi* (Moore) is a native of Java.)

8. *Theophila Huttoni*, Westwood. Cab. Or Ent. t. 19 f. 4. — This is a wild mountain species, feeding on the indigenous mulberry of Simla, Mussooree and Almora. I first discovered it at Simla in 1837, and afterwards in great abundance at Mussooree. In some years they swarm to such an extent that by the end of May, the worms of the first, or spring brood, have thoroughly denuded even large forest trees, not leaving a single leaf. In this predicament they quit the tree in search of another, which they generally find near at hand, and which is then soon thickly covered with cocoons spun in the leaves; but if, unfortunately, they fail to find a tree at hand, the whole brood perishes, the most forward worms spinning cocoons among shrubs and grass. The trees thus denuded, instead of dying, are in another month once more in full leaf, as if nothing had happened. *T. Huttoni* is a strong and hardy species, yielding a beautiful soft, whitish silk; and although the worm is too intractable and wandering to be treated in the usual manner in the house, yet I am by no means sure that it cannot be turned to good account by collecting the cocoons from the trees, as was evidently done in the outset by the Chinese with respect to *B. Mori*.

9. *Theophila bengalensis*, Hutton. — If the species discovered some years ago in Bengal by my friend Mr. A. Grote is correctly figured in my paper No. 2, just alluded to, then that sent to me from Chota Nagpur in 1869, by Mr. King, must be distinct, for it is in all respects as to shape, colouring, markings, &c., a perfect miniature of *B. Huttoni*; that it is distinct, however, is shown in the smaller size both of larva and imago, as well as in its being a polyvoltine instead of a bivoltine like *B. Huttoni*. In Chota Nagpur the food was the leaf of *Artocarpus Lacucha*, upon which tree likewise Mr. Grote found his specimens; but as the latter gentleman was in the habit of employing an accurate native delineator of insects, I much doubt any error occurring in the figure kindly supplied by him to me, and therefore am inclined to regard Mr. King's species as distinct from Mr. Grote's, and would term the Chota Nagpur insect *Bombys* (*Theophila*) *affinis*, (nob.) in reference to the remarkable affinity to *B. Huttoni*, in all its stages.

10. *B. affinis*, Hutton. — When the young worms hatched at Mussooree from eggs and cocoons were sent from Chota Nagpur, I had no leaves of *Artocarpus* within some miles and was sadly puzzled to feed the worms; I tried, without success, the leaves of wild fig trees, *Ficus senecis*, *Morus nigra*, *Morus sinensis*, *M. multicaulis*, *M. excelsa*, *M. serrata* (wild), but all to no purpose, and I had almost made up my mind to lose the species, when it suddenly occurred to me to try the leaves of *M. indica*. With these I succeeded, the young worms riddling the hard, coarse leaf into a perfect sieve in a few minutes. Like *B.*

Huttoni, in the two first stages they were dreadfully troublesome, wandering down from the branches and spreading all over the table, but as they grew larger they became more tractable and remained tolerably quiet, eventually spinning their cocoons in the leaf like *B. Huttoni*.

When the moths appeared, there was equal difficulty in getting them to pair, and then even many of them laid no eggs; those that did so deposited them in batches and then covered them over thickly with the brush or tuft of hair at the end of the abdomen; thus the eggs of *B. Huttoni* are pale straw colour, glued to the trunk or branches of the tree, and quite naked, whereas those of *B. affinis* are of an orange colour and covered with dark hair. This renders it difficult to detect them on the bark, and the covering is probably used as a non-conductor of heat. The eggs of *B. Huttoni* are scattered along the under side of the small branches or over the bark of the trunk, whereas those of *B. affinis* are placed in patches or groups, and none of the eggs that remain without a coating of hair ever produce worms. I obtained four broods, the last being reared on the trees of *M. nigra* in the open air. I am sorry to add that none survived the winter, although the cocoons were kept in a room with a fire; thus, after all my trouble, I lost the species. The silk resembles that of *B. Huttoni*, and is equally good, although from the smaller size of the cocoons there is less of it. Mr. Grote kindly sent me a specimen of his moth which, so far as I can remember, was whitish and very much smaller than that of *B. affinis*.

11. *Theophrasta subnotatus*, Walker, Proc. Lin. Soc. III., 188 (1859).—Nothing more is known of this species than is contained in Mr. Walker's description of the moth, and that it was procured from Singapur by Mr. R. A. Wallace; neither the larva nor its food is mentioned. Whether this be a true *Theophrasta* or not we cannot tell. (*T. mandarina*, Moore, is a native of Chekiang, China.)

12. *Theophrasta Sherwilli*, Moore.—This is closely allied to *B. Huttoni*, but the larva is unknown; all that has been ascertained is that the specimen was obtained from a collection made by the late Major J. L. Sherwill, but whether captured in the plains or at Darjiling no one knows. People who have often collected at Darjiling assure me they never saw the species there; hence I incline to regard it as a lowlander, feeding on *Artocarpus* perhaps. All that Moore says of it is that it is "allied to *B. Huttoni* and differs from it in being somewhat larger, and of a grayer colour, the fore-wing having the apical patch, fuliginous instead of black, and it has only a single transverse discal streak (instead of the two as in *B. Huttoni*). A most prominent character is that the abdomen is tipped with black, as well as having the dark waistband."

13. *Ociara religiosa*, Halfer, J. A. S. Ben., VI., 4.—Although this stands as a *Bombyx*, the entire description as given by Dr. Halfer applies rather to a species of *Ociara*. It is called the Jeri silk-worm by Halfer, and the Doe-méga silk-worm by Mr. Hagen. It is said to occur in Assam and Sikkim, but I have failed to elicit information from those localities. Bombycids are far less troublesome than the allied genera of *Theophrasta* and *Ociara*, and if indigenous in any district, there they will remain year after year, sometimes in greater, sometimes in lesser numbers; but *Theophrasta* and *Ociara* are both incognant, plentiful one year, absent altogether the next, and the latter sometimes for two or three

years. Hendo Grote for four or five years lost sight of *Theophrastus bengalensis*, and no one seems to have seen Helfer's *B. religiosa* since the time of its discovery.

14. *Ocinara Lida* Moore. (*O. Moorei*, Hutton) Cat. Lep., E. I. C. Mus., II., 381.—This species is found at Mussooree, where it feeds upon the leaves of *Ficus venosa*, the larva being very like that of a *Geometra*, and spinning a small white cocoon on the leaf or against a stone beneath the tree. It is too small to be servicable. I named it after Mr. F. Moore, but he tells me it is the same as the Javanese *O. Lida*. It is a multivoltine. It feeds on the wild fig also. (*O. diaphana*, Moore, also occurs in the Khasiya hills.)

15. *Ocinara lactea*, Hutton.—This also occurs at Mussooree, feeding on *Ficus venosa* and spins a curious little cocoon of a yellow colour within the leaf; over the cocoon is laid a net-work of yellow silk, too small to be of use. It has several broods during the summer. The larva is smooth, whereas that of the preceding is hairy. (*O. dilectula*, Walker, is a native of Java.)

16. *Ocinara Comma*, Hutton.—The moth of this is white, with a dark comma-shaped mark on the disc of the upper wings; hence the name. It occurs both in the Dún and at about 5,500 feet of elevation below Mussooree.

17. *Trilocks varians*, Moore. Cat. Lep. E. I. C. Mus., II., 382.—Is a small species found in Kánara; and again by Mr. Grote in Calcutta. As a silk-yielder it is of no value. For further remarks on these species, consult the second part of my paper "On the Reversion and Restoration of the Silkworm." (J. Agri-Hort. Cal., 1864, Trans. Ent. Soc.).

18. *Cricula trifasciata*, Helfer.—This handsome and curious species is found in various parts of India, sometimes in such numbers in the larva state as to become a perfectly destructive pest; it devours the mango trees of every leaf, destroys the foliage of the cashew-nut, and is even said to attack the tea plants. It occurs in Burma, Assám, Maulmain, and Chota Nagpur in Central India. The cocoons are formed in clusters, so closely interwoven that they cannot be separated for reeling, which, indeed, their very texture prohibits; they are therefore carded, but are not much used; the cocoons are very irritating, from a number of minute bristly hairs from the caterpillars. I am inclined to think there are two species now standing under this name; as some cocoons are very much reticulated, while those from other localities are far more closely-woven and scarcely reticulated at all. This will never prove productive as a silk-yielder, unless the cocoons can be reduced to a gummy pulp and used for some other purpose (*C. drepanoides*, Moore, occurs in Sikkim.)

19. *Atherna Mytilis* Drury.—This handsome species is distributed all over India from Burma to Bombay; but it has to be observed that there are in this wide range several distinct species included under the name. To separate these effectually must be the work of time, and until it is done, there can be no really good French silk produced. That several of these species are capable of producing a very valuable article of commerce is an undoubted fact, and from its cheapness and durability it would be a boon to that class of the British population which cannot afford to indulge in expensive silks. At present the native method is this: At the season when the cocoons

have been formed, the jungles swarm with them, and men sally forth to pluck them from the trees. These jungles, however, contain several distinct species, a thing of which the natives are profoundly ignorant; these cocoons are all promiscuously huddled together placed in hackeries, and carted off to the dealers. They are then sorted according to size, thickness, colour, &c., and named accordingly as a kind of trade mark, but without any reference to species. The cocoons selected for reeling are treated in the roughest manner and all kinds spun off together; those that are kept for breeding are allowed to eat out of the cocoon, as it is termed, and to interbreed, still without reference to species; and as this has been going on from time immemorial, of course the species have become blended into a most confusing cross-breed. Hence it results that if a dozen cocoons are taken at random, no two moths will resemble each other.

This system of crossing is not confined to the Tusseh group. I have detected it more than once in what were termed Japan worms imported direct from that island; indeed, I have not only detected the cross, but I have succeeded in separating the species which composed it; in one instance, I found *B. Mori* crossed with *B. sinensis*, and on another occasion *B. testator* and *B. sinensis*. In the case of domesticated species there is no great difficulty to contend with, but with regard to the wild species the thing is very different, and, in short, I can scarcely yet say that I see my way at all clearly. In the Dehra Dún and extending up the hill side to about 4,500 feet, perhaps more, we have two species of Tusseh, one of which is also found in Central India; what the other is I am not yet prepared to say. Here, however, we have no artificial crossing, so that our species may be regarded as types. The difficulty is to get the sexes of two moths showing marks of relationship to come forth at the same time, so as to obtain a brood and compare the larvae with others. To trust to the reports of the unscientific would only add to the confusion. A gentleman residing in one of these silk districts kindly furnished me with cocoons of what he declared to be distinct species, and furnished me with voluminous notes, but neither the one nor the other furnish the slightest data upon which I can work or depend; that a cross exists I can see, but my correspondent is not able to enter into my views and wishes.

20. *Atheras aculeos*, Hutton.—This is one of the species that has been crossed upon *A. Paphia*, and it seems to be not uncommon throughout Central India. It is a well-marked species, and as specimens have been sent to England. The silk would probably rival that of *A. Paphia*.

21. *Atheras*—?—I refrain from naming this until I can obtain more specimens; it is found in Central India and in the Dehra Dún. It is quite distinct from either of the foregoing.

22. *Atheras Feryi*, Guér. Mém.—This species was discovered in Manchuria, to the north of China, where it feeds on the oak. According to Mr. Fery he has captured two specimens of what he declares to be this species at Darjiling; these flew to a light placed out in the evening, but nothing further was ascertained. The great distance between the climates of Darjiling and Manchuria calls especial attention to this discovery, and leads me to wonder that the species has not been collected at Simonses and Ghazal, both further to the north.

20. *Antheraea Yamamai*, Guér. Mén.—This is a Japan species and is well thought of both in England and in France, where great efforts have been made to introduce it, but as yet with very indifferent success. Last year I received an ounce of these eggs direct from Japan, and found them to thrive admirably on our hill oak; unfortunately my means were not adequate to the undertaking, as gauze covers were found to be indispensable in order to ward off the attacks of insects, such as bugs, the larvæ of *Coccinella*, spiders, &c. However, the experiment was suddenly cut short in one night when the worms were in the fourth stage, by the incursion from below of a swarm of large black ants which carried off every one. The species however is well worth another trial.

21. *Antheraea assama*, Heifer.—This is the *Mûga* or *Munga* worm of Assam which produces a very excellent silk, which, if well reeled by skilful hands, instead of being carded, would be extremely valuable. I have found this species in the Dehra Dûn feeding upon a tree known to the natives as "*Kirkî*," but I only procured one male and have not since seen another.

22. *Antheraea Perrottetti*, Guér Mén.—Said to occur at Pondicherry, but although I long ago applied to the late M. Perrottet, he could not procure a specimen of it, although he sent *Antheraea Paphia* (vera) and *Actias Selene*. I am half inclined to regard it as a mere variety of *A. Paphia*.

23. *Antheraea Helferî*, Moore.—Is found at Darjiling, the cocoon resembling that of the common Tusseh.

24. *Antheraea Frithi*, Moore.—Is another Darjiling species, of which we know no more than of the last.

25. *Antheraea Roylei* Moore.—Is common at Simla, Mussooree, Almora, and, I think, Darjiling. It feeds upon the common hill oak, spinning a large but thin cocoon between three or four leaves. I found it at Simla in the winter of 1836 by following a flock of tomits, one of which, after a time, began tapping so loudly that I hastened to the spot and found the little fellow hard at work on the outer cocoon, from which I drove him off and pocketed the prize. The outer coating is very strong, and I do not think it could be reeled; but within this case is the true cocoon, of an oval form and yielding a good silk. The worms are easily reared, and sometimes give two or three crops, but this is when treated in the house. The males will couple with *Antheraea Paphia*, but the produce never comes to anything.

26. *Antheraea*—?—This is a species occurring near Bombay and discovered by the Messrs. Robertson of the Civil Service, who regard it as allied to *A. Yamamai* of Japan. From the rough sketch of the cocoon sent me it certainly appears to differ from *A. Paphia*, though I do not think it can possibly be *A. Yamamai*. (*A. Messasiensis*, Moore, occurs in Assam and *A. andamans*, Moore, in the Andamans).

27. *Antheraea*—?—Nothing is known of this species, except that I possess a well-formed (probably male) cocoon of about the size of one of the *B. Mori*, the peculiarity exists in there being no vestige of a pedicel or safety rope, the cocoon being equally perfect at both ends. Unfortunately the label has been lost, and I have not the faint recollection of where it came from or who

sent it, although I incline to think it came from Madras. I am particularly anxious to obtain living specimens of this, which is not only an undescribed species, but promises to be a valuable silk-yielder. Those remarks will serve to show how much scientific work yet remains to be done in this single genus of *Attacus*.

28. *Attacus Atlas*, Linn.—This is the largest of the real silk-spinners. Is common at 5,500 feet at Mussooree and in the Dehra Dón; it is found also in some of the deep warm glens of the outer hills. It is also common at Háwalbágh near Almora, where the larva feeds almost exclusively upon the "*Kilmora*," bush or *Berberis asiatica*; while at Mussooree it will not touch that plant, but feeds exclusively upon the large milky leaves of *Excoecaria insignis*. The worm is perhaps more easily reared than any other of the wild *Bombycidae*, producing a very large and well-stuffed cocoon of a grey colour and somewhat difficult to unwind; a strong ley of potash appears to be the best solvent. The species is also abundant in Cachár, Silhet, and is found also at Akyáb, in Arrakan, as well as in China.

29. *Attacus Edwardsi*, White (P. Z. S., 1859).—This species was discovered at Darjiling and is much darker in colour than the other, and rather smaller in size, but nothing seems to be known of its food and silk.

30. *Attacus Cynthia*, Drury (Ms. II, t. 6 f 2).—Abundant at Mussooree, feeding on various wild plants; common in China, where it feeds on *Ailanthus glandulosa*; found in Assám, Cachár, Ságar. Although it is commonly reported to be under cultivation in different places (*vide* Colonel Agnew's Assam Report), yet such is not the case, the *Attacus ricini* being in India invariably mistaken for it. Indeed until a few years ago, when I pointed out the fact, *Attacus Cynthia* was not known to occur in India, the other species passing under that name, as the silk-worms did under that of *B. Mori*. *Attacus Cynthia* has been imported into France and England and reared out in the open air on trees of *Ailanthus glandulosa*; it has likewise succeeded to some extent in Australia, and I believe they have it also at the Cape of Good Hope. There are difficulties attending the reeling of the silk as there is with all the *Attaci*, but nevertheless the French have succeeded in turning out some very good silk pieces. In England it is not quite so highly thought of as it once was. In Australia Mr. C. Brady has produced silk from it.

31. *Attacus ricini*, Jones (Trans. Linn. Soc., 1804, p. 42).—This is the worm that produces the silk known to the natives as the Arindi silk (from *arand*, the vernacular name of the castor-oil plant); it is easily reared and feeds on the castor-oil plant, *Ricinus communis*. The silk is obtained by carding. The chief places of cultivation are Assám, Bangpur, and Dinápur, in Eastern Bengal, not at Disapur, as stated in one of Dr. Bennett's reports. It is also cultivated in smaller quantities in other places. The Mekirs to the eastward possess a very fine kind with white silk. *Attacus ricini* thrives well at Mussooree, and has been introduced into France, Algeria, Malta and other places.

32. *Attacus Guerinii*, Moore.—Is known only from a few specimens of the moth in some mountains in England, and I am induced to regard it as no more than an ill-fed specimen of *A. ricini*. I have failed to procure it from any part of the

country, though I have seen an approach to it in ill-fed specimens of the former in my own trays. This underfeeding or semi-starvation is well exemplified in some very Lilliputian specimens of *Actias Selene*, received from a gentleman who reared it at Serampur, near Calcutta, where he only supplied the worms with food twice a day; the moths are only a quarter of the natural size. (*Attacus helica*, Hefner, occurs in Silhet; *A. canisigi*, Hutton, in the N.-W. Himalaya; *A. lanula*, Walker, in Silhet; *A. obscurus*, Butler, in Cachár).

33. *Actias Selene*, Hübner.—Very common in a wild state at Mussooree, where it feeds on the wild cherry, wild pear, walnut, *Cedrela paniculata*, (?) *Coriaria nepalensis*, and several other forest trees and shrubs. It occurs also at Almora, Darjiling, Asam, Cachár, Sagar, and at Serampur, near Calcutta. Mr. C. Turnbull failed to reel silk from the cocoons sent down from this, but it has been reeled, though there is not much of it.

34. *Actias Menas*, Doubleday.—Occurs at Darjiling and is a very large species, but nothing has been recorded of its habits, food, or produce.

35. *Actias Loto*, Doubleday.—Is another Darjiling species, the economy of which has yet to be ascertained. (*Actias sinensis*, Walker, occurs in N. China, and *A. ignescens*, Moore, in the Andamans).

36. *Saturnia pyretorum*, Boisduval.—Occurs at Darjiling and in Cachár, but nothing more is known of it.

37. *Saturnia Grotei*, Moore (P. Z. S., 1859).—Has been found at Darjiling and one or two specimens have been captured at Mussooree; but collectors of moths make no inquiries as to economy, and for all practical purposes the species might as well remain unknown. I am inclined to think that the larva feeds on the wild-pear tree (*Pyrus variolosa*).

38. *Saturnia Lindia*, Moore.—Of this nothing more is known than that it occurred in a collection made by the late Captain J. L. Sherwill, and is supposed to be from Darjiling or its neighbourhood. It is allied to *Saturnia Grotei*.

39. *Saturnia Cidosa*, Moore.—From Captain J. L. Sherwill's collection also, and from North-Eastern India, but we have no information regarding it. From its being closely allied to *Saturnia pyretorum*, I should be inclined to suppose it an inhabitant of Darjiling or Cachár.

40. *Neoris Huttoni*, Moore.—Found by myself at Mussooree at about 6,500 feet of elevation, feeding on the wild-pear tree. The larva are to be found in April. The cocoon is an open net-work, and would produce no silk.

41. *Caligula Sinda*, Westwood.—Occurs at Sinda, Mussooree, and in Kumaon, feeding on the walnut, *Salix babylonica*, wild-pear tree, &c.; but the cocoon is a white coarse open net-work, through which the pupa is visible, and yields no silk.

42. *Ritana Fitchii*, Westwood.—Occurs at Mussooree, where I have taken it on *Andropoda scutellaria*, wild-pear, and common rosin. It occurs also in Kumaon, but the specific name is a misnomer, the larva never approaching

Tibet. Specimens were taken out of a collection made in Kumaon, and because the collector travelled into Tibet it was ridiculously enough called a Tibetan collection, and the species named accordingly. The cocoon is a coarse open net-work, through which the larva is visible, but there is no available silk.

43. *Loepa Katinka*, Westwood.—A very beautiful yellow moth discovered originally in Assam, occurring also, according to my ideas, at Mussooree. Mr. Moore, however, considers mine as distinct. I am not quite satisfied that the cocoon will not yield silk, but there is very little of it.

44. *Loepa sivalica*, Hutton.—Closely allied to the last, and found at Mussooree at about 5,500 feet and lower. It will probably yield a small quantity of silk.

45. *Loepa Miranda*, Atkinson.—Found by him at Darjiling; a good and handsome species, but nothing more is recorded of it.

46. *Loepa sikkimensis*, Atkinson.—A very beautiful species found by Mr. Atkinson at Darjiling. It may be known from the others by the smaller size, and by the wings being clouded with maroon. Of its economy nothing is known. Three or four other species of this family occur in Darjiling and Silhet, but beyond their existence nothing is recorded.

(The following silk-producing species also occur:—*Risaca Zuleika*, Hope, in Sikkim: *Salassa Lela*, Westwood, in Sikkim: *Rhodhia newars*, Moore, in Nepál: *Caligula cachara*, Moore, in Cachár: *Noris Shadalla*, Moore, in Yarkand: *Noris Stoliczkana*, Felder, in Ladák: *Saturnia Anna*, Moore, in Sikkim.

Those species which, like *Actias Selene* and *Antheras Paphia*, weave strong compact cocoons, perfectly closed at both ends, are furnished on each shoulder with a hard wing spur for the purpose of separating the fibres when the moth is ready to come forth; it may be heard grating against the silk and the point may often be seen protruding. It is common to the genera *Actias* and *Antheras* and was discovered by myself. In *Attacus*, *Noris*, and *Loepa* the upper end of the cocoon is left open, the fibres pointing forward, closely arranged, like the fine wires of a mouse-trap. No spine is needed in these genera. In *Bombyx* and others, although the cocoons are entire, the silk is loosely woven, and the fibres, being moistened by an acid from the mouth, are then easily separated by the claws on the fore-feet of the moths.

This is about the state and extent of our knowledge of the Bombycidae of India; that there are many other species yet to be discovered no naturalist will think of denying. Nature is the book through which the Almighty teaches us to seek from earth to heaven, and as His works and knowledge are boundless, so has this beautifully illustrated book no end.

* Some are also valuable papers published in the J. Agri-Hort. Soc. Cal. by Captain Hutton in 1844: (1) "On the reversion and Restoration of the Silk-worms, Part I. and II." Part II. with distinctive characters of silk-producing Bombycidae." Both these are the best for reproductive purposes.

The following communication regarding certain experiments made by Captain Hutton¹ with the Japan silk-worm also deserve reproduction here. Experiments with the Japan silk-worm. He writes that he received the eggs in the beginning of March, when they were just beginning to hatch. This process went on very irregularly for many days, showing that the worms were not in a healthy state. He goes on to say :—

"When first hatched the worms had the head and prolegs shining jet black, the anterior segment ashy white, and the rest of the body as usual covered with small tufts of short hair of a pale brown. After the second moult the worm had a good deal of the appearance of the little China monthly worm (*B. sinensis*) known in Bengal as the '*Stae* or '*China*;' the markings and smallness of the worm being in some instances quite those of that species, while others of the same age appeared much larger and very much resembled the worms of *B. Mori* or *B. textor*, being of a sickly white with the usual semilunar spots on the back. Like the worms of *B. sinensis*, however, they grew very slowly until the last stage, when the increase in size was rapid and the worms bore all the appearance of a *bara paik* or a dwarf, *B. Mori* being at maturity about $2\frac{1}{4}$ inches long, which is the size to which *B. textor* attains at Mussooree. For a long time I was sorely puzzled to make out what the worm could be, for the variety in the marking of different individuals was so great and so often changing at the time of moulting that I began to think the worm must be distinct from any known species, until suddenly the mists of doubt were entirely dispelled by the appearance of a black worm in all respects identical with those of my reverted *B. Mori*. From that moment I began to see my way, and when at length on the 2nd of May, just 26 days after hatching, the worms began to spin their cocoons it was perfectly evident that the worm, about which the French have gone mad, and the silk-cultivating world has made such a fuss, is nothing more than a hybrid or cross between the true sickly *B. Mori* and the little monthly *B. sinensis* or '*Stae*."

According to the labels attached to the wooden tubes in which the eggs arrived one hatch should have produced '*white*' cocoons, and the other '*green*;' yet both have spun them of the same size and shape, and all are of a pale sulphur yellow, except that of the solitary black worm, which is decidedly as to size and colour an undersized specimen of *B. Mori* of Kashmir and China. The moths, which came out on the 19th May, are miniatures of the pale unhealthy specimens of *B. Mori*, being ashy white with a faint transverse brown line on the upper wing. I have preserved some of the eggs wherewith to carry on my observations, and ascertain whether eventually the cross will wear out as in other instances, and the worms revert to the annual *B. Mori*. Further than this I do not consider the worm worth cultivating as the uncrossed races from which it is derived are to the full as good or even better in every respect, for the *B. Mori* can only be deteriorated by such a cross. I have long known these cocoons, having received specimens both from Mr. Moor of the B. I. Museum and from M. Guérin-Méneville with a request to mention to what species they belonged; I decided that they were the product of *B. sinensis*, but without any idea then that the worm had been

crossed. In the colour and size of these cocoons we recognise the influence of the small polyvoltine *B. sinensis*, and in the shape and texture the influence of *Bombyx Mori*. As to the univoltine-polyvoltine character of the worms, all will depend upon climate, and the degree of influence exercised over individual worms or moths by the species from which they spring, and no purchaser of eggs in Japan, China or elsewhere can ever be certain that he has secured a batch of either univoltine, bivoltine or polyvoltine worms, because all experiments hitherto tried in the crossing of the various species of silkworms have invariably shown that there is always a strong tendency to revert to the strongest and healthiest species. I found this to be the case in my own experiments in crossing *B. Mori* of Kashmir with *B. Cræsi*, the *Nistri* of Bengal. A cross between a univoltine and a polyvoltine species will produce eggs some of which will be polyvoltine for a time, others will be bi- or tri-voltine, but the majority (unless in a hot climate) will revert at once to univoltines or annuals. Climate or temperature, as I long since remarked, will influence the colour of the cocoons, and this is shown in the fact that instead of 'white' and 'green' cocoons my Japanese worms have all produced sulphur yellow cocoons."

SERICULTURE.

In 1856, Captain Hutton brought to the notice of Government the existence of several species of silk-producing moths in Mussooree and the Dehra Dûn, and suggested that steps should be taken to ascertain whether they would submit to domestication like the silk-moth (*Bombyx Mori*) of China. His proposals were accepted, and in 1858 a grant was made to carry them out. In 1859, Captain Hutton reported that the wild mulberry tree was unfitted by slowness of growth for extended operations and that the quick-growing Chinese plant was not attractive to the *Bombyx Huttoni*, the subject of his experiment. Further, that the worms of this species, were irreclaimably wild even when crossed with other species and therefore that the experiment had failed both as regards the insect and the tree. He showed, however, that the climate was admirably adapted for sericulture and advocated further attempts with other silk-producing moths and other trees. The grant was, however, withdrawn and sericultural experiments were left to individual effort for some time. In 1850, the Chinese mulberry (*Morus chinensis*) was introduced by Dr. Jameson, and subsequently propagated in the Dûn, where it thrives luxuriantly, as well as a variety known as *M. multicaulis*, both of which are eminently suited for silk-worm breeding. The latter is said to be a variety of *M. alba* though,

according¹ to Mr. Duthie, it now varies much from the great shrub described under that name.

In 1867, Captain Murray commenced a series of experiments with seed imported from Bengal and obtained good returns in quality and quantity. In the meantime the Government gardens had distributed cuttings and plants of the better kinds of mulberries to all who desired to propagate them, but nothing of importance was undertaken and sericulture remained in the purely experimental stage in the hands of private individuals until 1874, when Mr. H. Ross commenced a plantation of mulberries on a large scale at Ambiwála in the Dán.

By the end of 1875 Mr. Ross had twenty acres of young trees not old enough to produce any leaf and 100 Mr. Ross's experiments. old trees fully grown. He procured silkworm seed from Japan and Kashmir, but during his absence the trees were allowed to die, and the seed was neglected. None of that procured from Kashmir hatched and not much of the Japan seed and altogether only about 48lb. of cocoons were produced and about five to six ounces of seed, a good deal of which died from want of care. The proceedings of the year, 1876-77 were equally unsatisfactory, and but little progress was made. The report for 1877-78 is another record of failure, but the carelessness and neglect which were marked features in the operations of the previous year are wanting on the present occasion. The experiment was throughout the year under the personal management of Mr. Ross, whose

¹ Mr. Duthie writes:—"The plant (*M. multicaulis*) according to Bureau (De Candolle's Prodrôme, Pt. XVII., p. 244) is given as one of the numerous varieties of *M. alba*. He mentions that it is cultivated in S. China, where it is considered to be the best kind for rearing silkworms. I suspect, however, that the *M. multicaulis* of N. India, whatever may have been its origin, is a very different plant now to the one known under this name both in Europe and China. M. Bureau describes the leaves of the Chinese plant as being very large, and gives, as a synonym, *M. chinensis*, a variety which was introduced by Dr. Jameson from China many years ago. The leaves of the latter are certainly very different in appearance from those of the variety known in the Dán as *M. multicaulis*, which has small thin leaves. It also differs in its behaviour under cultivation. The *M. multicaulis* of the Dán will grow easily in any kind of soil, whereas the *M. chinensis* requires a great deal of care. The effect of cultivation and climate on the many varieties of mulberry which have been grown, either for the production of fruit or for the supply of leaves as silkworm food, have added very greatly to the difficulties of botanical discrimination. This is more or less the case with all such plants whose cultivation has extended from very early periods. The characters of the original become in time obliterated or mingled with those of the several varieties which have been produced from the indigenous species. *M. multicaulis* was in fact on the 17th January (1869), just a fortnight before any other kind in the garden."

attention to the conduct of the experiment and interest in its success was undoubted. Nevertheless, both worms and eggs failed in an unaccountable manner, the final outturn was very small, and a few villagers to whom worms were given succeeded in rearing much larger cocoons than any that were produced on the Government plantations. The records of the experiment had not been kept in sufficient detail and no data were available from which any lessons that could be relied upon for future guidance could be drawn. The eggs had been kept in Mussooree from May to January each year to prevent their hatching during the hot-weather and rains, when the climatic influences were unfavourable, and much was expected from the operations of 1878-79 to settle many of the questions of detail. The season was, however, an exceptionally unfavourable one. Mild weather, at the commencement of February caused the mulberry to shoot somewhat earlier than was customary and induced the growers to bring down the seed from Mussooree for hatching at an earlier date than usual. No sooner had the young caterpillars appeared than a succession of cold frosty days cut the mulberry shoots back and left the grubs with insufficient nourishment, resulting in small cocoons of inferior quality. The worm was not killed at once when the cocoon was fully formed, but was allowed to partly out its way through before being destroyed; and even then no precautions were taken to dry the cocoons and the worm was allowed to decompose within and stain the fibre. Notwithstanding all these drawbacks, the report on the small quantity of silk produced was that it was superior to Bengal qualities and a valuable addition to the local supplies. The representative of a Bradford firm of silk merchants

Present state of the experiment. interested himself very much in these experiments, and in 1879-80 took over their supervision, the financial responsibility remaining with Government. The results were encouraging: over fourteen maunds of cocoons were brought in by private rearers, and though the quality was not first class, they gave promise of ultimate success. During 1880-81, the entire responsibility for the supervision remained in the same hands and arrangements were made for handing over the Government sericultural establishment and a considerable area for mulberry plantations. A scheme was also under consideration

for the establishment of mulberry plantations at intervals along the slopes of the Hímálaya for the purpose of cottage-rearing. The great difficulty to be encountered is in the matter of seed, and this can only be overcome by prohibiting the rearing of seed by villagers, as the worms raised from this seed are invariably diseased and the silk suffers accordingly. It would appear that this precaution is necessary in other countries also. An expert writes (1880) :—

“In every country without exception the disease has crept in where cottagers have been allowed to rear seed. The industry has been ruined by it in Asia Minor first, then in Europe (Italy, then France); and as each country's stock became effete and diseased, it had to import seed at great expense, and commenced a drain from another country, which in turn gave the fatal impulse to seed production in the new country with the usual result, that, in hastening to become rich rapidly, the people took to breeding from inferior cocoons, instead of following their old habits of careful selection, with the consequence of deterioration and then disease amongst their stock. Thus Italy commenced a drain from Japan long ago, and as Japan stock required renewing yearly in Italy (as it would not acclimatise, i.e., deteriorated yearly till it was of little or no use after the third year in Italy), this proved a constant drain and great source of revenue to Japan. Then came the failure in France, and once disease creeps in where the cottagers are allowed to breed and sell seed *amongst themselves*, it only takes about five years to ruin a country. Thus France became ruined so far as stock goes, and the industry is in a ruinous condition, as I saw last year when visiting the silk districts in the south of France. An increased drain came on Japan; the Japanese found greater profit in breeding seed—faults in which are so difficult to discover—to growing and reeling silk, which latter can be so much better judged on its merits. They got careless and greedy, and the usual result followed; they have now had the disease amongst them in Japan for I believe about six years, and the old confidence in Japanese seed is gone. Thus virtually all the seed markets are spoilt, as we know to our cost, as all our imported seed this past season was more or less diseased, and we have lost over Rs. 7,000 in bad seed, besides losing the season. To bring the importance of the question nearer home, the old indigenous Panjáb cocoon is excellent. Mr. Halsey, as an experiment, imported a few Italian eggs into the Panjáb some six or seven years ago, till when the disease was unknown. These Italian eggs brought the disease, and now the indigenous race is ruined, and has failed four years rearing. We have over Rs. 5,000 out in advances this year to rearers in the Panjáb unworked off owing to the failure again this year. There is more in this still, as the natives will not throw away their old seed; and if we give them new good seed, they will keep the two together and spread the disease amongst our new stock, and ruin us with yearly importing expenses, did we not keep a special rearing establishment out here, or else have plantations of our own in the Panjáb, on which we could keep some stock on the seed used.”

The only measures for preventing the rearing and distribution of cottage-reared seed that have yet been proposed are that clauses should be entered in the contract with the rearers that they should, under a penalty, bring in all the green soed-cocoons to the central stations to be destroyed there, and that they should rear no other seed than that distributed to them. The future of the silk industry is now in good hands, and so far as skill, experience and capital can conduce to arriving at success, the conditions exist. There can be no doubt that it would not repay a European to conduct the rearing process himself, but it will give the weaker members of the agricultural classes full and remunerative employment, and the European will find his place in supervising the cottage operations, supplying seed, collecting, sorting and disposing of the produce and increasing and tending the mulberry plantations.

The tribes *Noctues*, *Pseudo-deltoides*, *Deltoides*, *Pyrales*, *Geometres*, *Crambices*, *Tortrices* and *Tineines* are all represented in the Himalaya. The last three tribes have been but imperfectly worked and the microlepidoptera of India may be said to be almost unknown to science. For beauty of colouring and for economic study the *Tineines* yield to none. As observed by a distinguished naturalist, "the wings frequently combine with extreme beauty of colouring the most brilliant little stripes and masses of shining silver and burnished gold which under the microscope exhibit a most radiant richness. This lustrous aspect of many species is but a poor recompense for the injury which we receive from many more while in the larva state. These clothe themselves at our expense in the warmest woollen garments which they traverse in all directions, leaving behind a gnawed and well-worn path so thin and bare as to yield to the slightest pressure. They also destroy furs, hair, feathers and many other articles of domestic economy and are the exterminating pests of zoological museums." The sugar-cane is attacked by a borer in the Mauritius and West Indies identified as the caterpillar of *Phalana saccharalis*, Fabr. (= *Diatraea sacchari*, Guiling) and the same or an allied species occurs in Behilkhand. Our grain is also liable to great damages from moths, and in the Bombay Presidency the cotton suffers from the ravages of a small species (*Depressaria gossypivella*) which deposits its eggs in the germen at the time of flowering and the larva feeds on the cotton seeds until the pod is

ready to burst, a little previous to which it opens a round hole in the side of the pod through which it descends to the ground, and burrows into it about an inch, and there assumes the pupa state. The perfect insect is dark fuscous brown, the head and thorax somewhat lighter in colour: fore-wings with an undefined round blackish spot on the disk a little above the centre of a fascia of the same colour, crossing the wings a little above the apex, which itself is black: under-wings silvery grey, darker towards the hinder margin. The only way to arrest its ravages is to dig the soil slightly around the roots of the plant and either collect it to the depth of an inch and burn it or collect the pupæ and burn them or apply a caustic solution of lime. Space and time do not allow us to note the many species useful to man or destructive of man's labours, and we hope that the day is not far distant when some of the many labourers in this field of Natural History will give us a series of manuals fitted for the systematist and the economical observer. Every county in England has an almost complete list, but there is not even an attempt at one yet for any order of the insect fauna of India.

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LEPIDOPTERA.

Rhopalocera.

A= submontane tract including Tarai, Bhabar, and Duns.

B= outer Himalaya.

C= upper valleys towards and beyond the snows.

Family Nymphalidae.

Danaus, Latr.—*Philomela, Zink.*, B: *Tytis, Gray*, B, Sept.-Oct.

Redenia, Moore—*similis, Linn.*, B.

Tirumala, Moore—*Limniaca, Linn.* A: *septentrionalis, Butler*, A.

- Salatura, *Moore*—*Genutia*, A B; *chrysippus*, A, *Cramer*: *do-*
rrippus, A, *Klug*.
- Parantica, *Moore*—*Aglea*, A B, *Cramer*.
- Euplaea, *Fabr.*—*Core*, *Cramer*, A: *vermiculata*, *Butler*, B:
Deione, *West.*, B: *Phænareta*, *Schall.*, B,
rare: *splendens*, *Butler*, Káli Kumaon, B.
- Zophocesa, *Westwood.*—*Yama*, *Moore*, B.
- Melanitis, *Fabricius.*—*Leda*, *Linn.*: *Banksia*, *Fabr.*: *Aswa*,
Bela, *Moore*, A, B: *Constantia*, *Cramer*, B.
- Neope, *Butler.*—*Pulaha*, B., *Moore*.
- Lethe, *Hübner.*—*Europa*, *Fabr.*, B: *Dyrta*, *Felder*, B: *Bohria*,
Fabr., B: *Verma*, *Kollar*, B: *Sidonis*, *Hewit-*
son, B: *Hyrania*, *Kollar*, B: *Visrava*,
Moore, B.
- Orinoma, *Gray.*—*Damaris*, *Gray*: wooded lowlands.
- Erebia, *Dalm.*—*Kalinda*, B, C, *Moore*.
- Callerebia, *Butler.*—*Scanda*, *Annada*, *Nirmala*, B, C, *Moore*:
hybrida, B, *Butler*.
- Rhaphicera, *Butler.*—*satricus*, *Doub. et Hew.*, wooded hills be-
yond Almora.
- Satyrus, *Latr.*—*Mærula*, *Felder*, C, rare: *Schakra*, *Kollar*, B:
Menava, *Moore*, C, rare.
- Epinephile, *Hübner.*—*pulchella* (= *Neoza*, *Lang*), C: *pulchra*,
Felder, C: *Davendra*, C; *Cheena*, C,
Moore: *goolmurga*, *Maiza*, rare, *Baspa* val-
ley, *Lang*.
- Aulocera, *Butler.*—*Saraswati*, B, in rains; *Padma*, B, in rains,
Kollar: *Brahminus*, *Blanchard*, B, common:
Weranga, *Lang*, C, rare: *Baldiva*, *Moore*,
C.: *Hübneri*, *Felder*, C.
- Calysiste, *Moore.*—*Drusia*, *Cramer*, B: *Blasius*, A, B.; *Per-*
sens, B, *Fabr.*; *Visala*, B, *Moore*.
- Orsoctrisana, *Wallengren.*—*Mandata*, A, B; *Buneka*, B, *Moore*:
Medus, B., *Fabr.*
- Samanta, *Moore.*—*Nicotia*, *Hew.*, A, B: *Nala*, *Felder*, B:
Lepcha, B, *Moore*.

- Rohana, *Moore*.—Parisatis, C, rare; *Kollar*.
- Ypsthima, *Hübner*.—Nareda, *Kollar*, B: ordinata, *Butler*, B, Philomela, *Joh*. B: Sakra, *Nikæa*, *Hyagriva*, *Moore*, B: Methora, *Hewitson*, B, rare: *Hübner Kirby*, B, all in rains.
- Elymnias*, *Hübner*.—undularis, *Drury*, A, rare in B: leucocyma, *Godart*, rare, in Kâli Kumaon.
- Pareba*, *Doubl*.—Vesta, *Fabricius*, A.
- Telchinia*, *Doubl*.—Viola, *Fabricius*, A.
- Messaras*, *Drury*.—erymanthis, *Drury*, A, B.
- Atella*, *Doubleday*.—Phalanta, *Drury* A, B: Egista, *Cramer*, B.
- Argynnis*, *Fabr*.—Childreni, *Gray*, B: Niphe, *Cramer*, B, common: Clara, *Blanch*., B, rare: rudra, B, rare; Kamala, C, rare; Jainadeva, C, rare, *Moore*: Lathonia, *Linn*., B common.
- Melitæa*, *Fabr*.—Sindura, C, very rare: Balbita, C, *Moore*.
- Symbrenthia*, *Hübner*.—Hyppocla, *Cramer*, B, in forest; Hypselis, *Godart*, B: Hysudra, B, rare, *Moore*.
- Vanessa*, *Fabr*.—Canace, B, in forest; urticæ, *Linn*., A, B, very common: xanthomela s, *Esp*., B, C, rare: Rizana, C, *Moore*.
- Pyrameis*, *Hübner*.—indica, *Herbst*, B: Cardui, *Linn*., A, B, C, very common.
- Grapta*, *Kirby*—agnicula, B, *Moore*: C.-album, B, *Linn*.
- Junonia*, *Hübner*.—Lemonias, A; Orythis, A; Asterie, A; Almana, A; *Linn*.: Hieria, *Fabr*., A: all occasionally in low valleys in hills before rains.
- Precis*, *Hübner*.—Ida, *Cramer*, B, common in rains: Iphita, A, *Cramer*; Laomedia, A, *Linn*.
- Pseudergolis*, *Felder*.—Wedah (Hara), *Kollar*, B, common in rains.
- Kallima*, *Westwood*.—Atkinsoni, *Ramsayi*, *Buckleyi*, *Boisduvali*, *Huttoni*, *Moore*.
- Ergolis*, *Boisduval*.—Ariadne, *Linn*., A, rare; B, common.

- Cyrestis*, *Boisdual*.—*Thyodamus*, *Boisd.*, B, common, June :
Risa, *Do. et Hew.*, B, rare, Káli Kumaon.
- Hestina*, *Westwood*.—*Nama*, *Doubl.*, B, rare : *Mena*, *Moore* (?),
 B, rare : *persimilis*, *West.*, B, common.
- Euripus*, *Westwood*.—*Halitherses*, *Dou. et Hew.*, B : *consimilis*,
West., B, rare.
- Parthenos*, *Hübner*.—*Gambrisius*, *Fabr.*, B, rare ?
- Moduza*, *Moore*.—*Procris*, *Cramer*.
- Limenitis*, *Fabr.*.—*Ligyas*, B, *Hew* : *Trivena*, *Danava*, B, *Moore* :
Daraxa, *Doubl.*, rare.
- Rahinda*, *Moore*.—*Hordonia*, *Stoll*.
- Neptis*, *Fabr.*.—*Manasa*, B ; *Ananta*, B, rains ; *Emodes*, B, rare ;
Narayana, B ; *Zaida*, B ; *Amba*, B ; *Vikasi*, B ; *Soma*, B ; *Ophiana*, B ; *Nandina*,
 A, B ; *Aceris*, A, B ; *Jumba*, B, C ; *Astola*,
 B ; *Mahendra*, B ; *Cartica*, B, *Moore* :
Magadha, *Felder*, B, C.
- Athyma*, *West*.—*Leucothoë*, *Linn.*, A, rare ; B, common : *Nesta*,
Cramer, B, Káli valley : *opalina*, *Kollar*, B :
Bahula, B, rare ; *Cama*, B ; *Maheea*, B ;
Asura, B, rare ; *Moore* : *Inara*, *Do. et Hew.*,
 B, rare : *selenophora*, B ; *Sankara*, B, C,
 rare, *Kollar*.
- Euthalia*, *Hübner*.—*Lubentina*, *Cramer*, B, rare, Káli valley :
Doubledayii, *Gray*, B : *Sahadeva*, B, rare ;
Durga, B, not common ; *Garuda*, B, rare ;
Jahnu, B, rare ; *Kesava*, B, rare ; *Moore* :
Lepidea, *Butler*, B, rare : *Appiades*, *Men.*,
 B, rare, Káli : *Somadeva*, *Felder*, rare : all
 are rare and difficult to capture.
- Apatura*, *Fabr.*.—*Bolina*, *Misippus*, *Linn.*, A : *dichros*, *Kollar*,
 B : *Namouna*, *Doubleday*, B, rare.
- Dichorragia*, *Butler*.—*Nesimachus*, *Boisdual*, B, not uncom-
 mon.
- Dilipa*, *Moore*.—*Morgiana*, *West.*, B, C, not uncommon in
 forests.

Charaxes, Ochs.—*Athamas, Drury, B*: *Eudamippus, Doubl.*,
B, rare: *Polyxena, Cramer, B*, not uncommon, very variable.

Family *Lemoniidae*.

Libythea, Fabr.—*Myrrha, Godart, B*, in forest: *Lepita, Moore*,
B, rarer.

Dodona, Hewitson.—*Durga, Kollar, B*, common: *Egeon, Dou. et Hew.*, B, rare: *Ouida, Moore, B*, common: *Eugenes, Bates, B*, rare.

Zemerus, Boisduval.—*Flegyas, Cramer, B*, rare.

Abisara, Felder.—*Fylla, Dou. et Hew.*, B, rare: *Echeria, Stoll*,
B, rare: both near water in rains.

Family *Lycenidae*.

Miletus, Habner.—*Symethus, Cramer, A*: *Drumila, Moore, A*, a straggler.

Curetis, Habner.—*Thetys, A, Drury*: *Bulis, B, Dou. et Hew.*:
dentata, stigmata, B, Moore.

Cyaniris, Moore.—*Akasa, B, Horsfield.*

Chilades, Moore.—*Varunana, A, Moore*: *Putli, B, Kollar.*

Zizera, Moore.—*Karsandra, A, Moore.*

Tarucus, Moors.—*Theophrastus, A, B*; *Plinius, A, Fabr.*: *Nara*,
B, C, rare, *Kollar.*

Castalius, Moore.—*Rosimon, A, B, Fabr.*,

Catochrysops, Boisduval.—*Strabo, A*; *Cnejus, A, B, Fabr.*: *Pandava, A, Horsfield*: *contracta, B, Butler.*

Polyommatus, Latr.—*Bæticus, A, Linnæ*: *pseuderos, B*; *dilectus*,
B; *Chandala, A, B*; *Kasmira, B*; *alboceruleus, B, Moors.*

Lampides, Habner.—*Ælianus, B, Fabr.*: *Elpis, B, Godart*: *Dipora, B, Moore.*

Talicada, Moore.—(*Scolitantides*) *Nyseus, A*, rare, *Gubr. Mén (?)*:
Vicrama, C; *cashmirensis, C, Moore.*

Lysena, Fabr.—*Phlæus, Linnæ, B*; *Pavana, Kollar, B*, rare:
Ariana, C; *Kasyapa, B, C*; *Zarhaspa, C*,
Buspa valley (?). *Moore*: *tinacus, B, Cramer.*

The following are not distributed :—

Plebeius, *Linn.*—*Pandia*, C ; *Asoka*, C ; *Kollar* : *Zena*, A ; *Sangra*, A ; *Nazira*, B ; rare ; *Kandura*, A, *Moore* : *Puspa*, A, *Horsfield* : *Galathea* (= *Nycula*, *Moore*), *Blanch.*, B : *Stoliczkana*, C ; *metallica*, B, C, rare ; *Felder* : *Laius*, *Cramer*, A.

Thecla, *Fabricius*.—*Deria*, *Moore*, B, upper Garhwál.

Zephyrus, *Dalm.*—*Syla*, *Kollar*, B : *Odata*, B, C ; *Ataxus*, B ; *Damia*, B ; *Katura*, B ; *Hewitson* : *icanus*, B, *Moore*.

Aphnæus, *Hübner*.—*Ictis*, *Hewitson*, A : *Vulcanus*, *Fabricius*, B.

Ilerda, *Doubleday*.—*Tamu*, B, rare ; *Sona*, B, very common ; *Kollar* : *Androcles*, *Dou. et Hew.*, B : *Oda*, B ; *Brahma*, B ; *Moore*.

Camena, *Hewitson*—*Ctesia*, *Hewitson*, B.

Iolaus, *Hübner*—*Longinus*, B ; *Cippus*, B ; *Fabricius* : *Cotys*, *Hewitson*, B, rare and doubtful.

Sithon, *Hübner*.—*Lisias*, B, rare ; *Jafra*, B, *Fabr.* : *Milionia*, B, common ; *Melisa*, B, *Hewitson* : *Jangala*, *Horsfield*, B : *Acta*, B, rare ; *Onyx*, B ; *Ravata*, B ; *Moore* : last three obtained in a soldier's box, doubtful.

Myrina, *Fabr.*—*Atymnus*, *Cramer* : B, October in Dún.

Deudorix, *Hewitson*—*Perse*, *Hewitson*, B : *Nissa*, *Kollar*, B : *Mæcenus*, *Fabricius* (?).

Arhopala *Hew.*—*Centaurus*, *amantes*, *Hew.*

Amalypodia, *Horsfield*.—*Diardi* (?), *Hewitson* : *quercetorum*, B ; *Ganesa*, B ; *Moore* : *Rama*, *Kollar*, B. *dodonea*, B, *Moore*.

Family *Papilionidæ*.

Nychitona, *Butler*—*Xiphia*, *Fabricius*, A : *Medusa*, *Cramer* (?).

Terias, *Suganson*.—*Læta*, *blanda*, *Boisd.* : *Drona*, *Sari*, *Horsfield* : *Venata*, *Moore* : *Rabella*, *fimbriata*, *Wallace* : *Hecabe*, *Linn.* : *candida*, *brigitta*, *Cramer* : only in submontane tract and lower hills.

- Huphina*, *Moore*.—*Remba*, B, *Moore*.
- Belenois*, *Hübner*.—*Mesentina*, A, *Cramer*.
- Delina*, *Hübner*.—*Eucharis*, A, *Drury*: *belladonna*, B, *Fabr*:
Sanaca, C, very rare, *Moore*: *Pasithoe*, B (?),
Linn.
- Appias*, *Hübner*.—*Paulina*, A, *Cramer*: *Galba*, A, *Wallace*:
Indra, A, B, *Moore*: *Lalage*, B, *Doubl*: *Lá-*
bythea, A, *Fabricius*.
- Pontia*, *Fabr*.—*Zeuxippe*, A, *Cramer*: *Neriasa*, A, B, *Fabr*:
Soracta, B, *Moore*.
- Metaporin*, *Butler*.—*Nabellica*, C, *Boisd*: *Agathon*, B; *Cap-*
husa, B, *Moore*.
- Synchlöe*, *Hübner*.—*Daplidice*, C, *Linn*: *Canidia*, A, *Sparm*:
Ajaka, B, rare, *Moore*: *Brassicæ*, B (*Var.*
nepalensis), *Linn*.
- Nepheronia*, *Butler*.—*Avatar*, *Moore*, B, rare: *Valeria*, *Cramer*,
A, B.
- Catopsilia*, *Hübner*.—*Catilla*, *Crocalle*, *Cramer*, A: *Gnoma*, A;
Ilea, A, *Fabr*: *chryseis*, *Drury*, A:
Pyranthe, *Linn*, A: *Pomona*, *Fabr*, A:
all occur also in lower hills.
- Gonepteryx*, *Leach*.—*Rhamni*, *Linn*, B: *Zaneka*, *Moore*, B, C.
- Colias*, *Fabr*.—*Crocus*, *Fourcr*, B, very common: *Fliedii*,
Mén, B: *ladakensis*, *Felder*, C, rare: *Erate*,
Esp, B, very common: *Hyale*, *Linn*, B.
- Ixias*, *Hübner*.—*Marianne*, *Cramer*, A: *Pyrene*, *Linn*, A:
Rhexia, *Fabr*, B: two last very variable:
Dharmasala, B; frequent, B, *Butler*: *Agni-*
verna, C, *Moore*.
- Teracolus*, *Swains*.—*fausta*, A, *Olivier*: *ochreipennis*, A;
farrinus, B, *Butler*: *dynamene*, A, *Klug*:
amatus, A, *Fabr*.
- Euchloe*, *Hübner*.—*Ausonis* (= *Daphalis*, *Moore*), *Hübner*, C,
rare in upper Garhwál and Basáhr.
- Parassasia*, *Latr*.—*Hardwickii*, *Gray*, B, C, western Garhwál:
Jacquemontii, *Boisd*, C, western Garhwál:
Stoliczkanus, *Felder*, C, from Kundoor.

Papilio, Linn.—*Pompeus*, *Cramer*, B, rare in dense forest; *Clytia*, A; *Panope*, A; *Polytes*, A, B; *Paris*, B; *Helenus*, B, rare from Káli Kumaon (?); *Sarpedon*, B; *Machaon*, B, *Linn.*: *Agestor*, *Gray*, B, rare: *Aristolochis*, *Fabr.*, B; *Govindra*, *Moore*, B, rare: *Rhetenor*, B, rare; *Astorion*, B, rare; *Cloanthus*, B, rare, *Westwood*: *Erithonius*, A; *Protenor*, B, *Cramer*: *Polyctor*, *Boiscl.*, B: *Latreillei*, *Don.*, B; *Nomius*, *Esp.*, B, rare, Káli Kumaon.

Family *Hesperida*.

Badamia, Moore—*exclamationis*, *Fabricius*, A, B.

Ismene, Swains.—*œdipodea*, B, *Swains*.

Choaspes, Moore—*Benjaminii*, B, *Guér.-Mén*.

Bibasis, Moore—*Sena*, A, *Moore*.

Parata, Moore—*chromus*, A, *Cramer*: *Alexis*, A, *Fabr*.

Pisola, Moore—*Zennara*, A, *Moore*.

Pamphila, Fabr.—*Druma*, A; *Sasiyama* (?), A; *Brahma*, B, *Moore*: *Angias*, A, B, *Linn.*: *Dara*, B, *Kollar*: *Eltola*, *Hewitson*, B.: *Mathias*, B, *Fabr*.

Matapa, Moore.—*Aria*, A, *Moore*.

Astictopterus, Felder.—*Diocles*, A, *Moore*.

Isoteinon, Moore.—*masuriensis*, B, *Moore*.

Thanaos, Moore.—*stigmata*, B, *Moore*.

Chapra, Moore.—*Agna*, B, *Moore*.

Padraona, Moore.—*Mæsa*, A, B, *Moore*.

Ampittia, Moore.—*Maro*, A, *Fabricius*.

Halpe, Moore.—*radians*, B, *Moore*.

Taractocera, Butler.—*Sagara*, A, rare; *Danna*, B, *Moore*.

Hyarotis, Moore.—*Adrastus*, A, *Cramer*.

Tagiades, Hübn.—*Menaka*, A, B, common; *Gopala*, B, rare; *Bhagava*, A, rare; *Dasahara*, A, B, common; *Ravi*, A, *Moore*: *Atticus*, B, *Fabr*.

Udaspes, Moore.—*Folus*, A, B, common, *Cramer*.

Coladenia, Moore.—*Indrani*, A, B, *Moore*.

Plesioneura, *Felder*.—Dan, *Fabricius*, B: *Putra*, A, B; *Chamunda*, A, B; *Ambareesa*, A, B; *Pulomaya*, A, B; *Dhanada*, A, B; *Moore*: *leucocerca*, *Kollar*, B.

Hesperia, *Fabr.*—*Divodasa*, A, *Moore*: *Thyrsis*, *Fabr.*, B, rare: *Cinnara*, A, B, *Wallace*.

Nisoniades, *Hübner*.—*Tages*, A, common, *Linn.*

Pyrgus.—*Galba*, A, *Fabr.*

II—HETEROCEBA.

Tribe—Sphingea.

Family *Sphingida*.

Sataspes, *Moore*.—*infernalis*, *Westwood*: *uniformis*, *Butler*.

Hemaris, *Dalm.*—*Saundersii*, *Walker*: *Hylas*, *Linn.*

Rhopalopsyche, *Butler*.—*bifasciata*, *Butler*: *nycteris*, *Kollar*.

Macroglossa, *Ochs.*—*gyrans*, *Sitiene*, *Walker*: *bombylans*, *Boisd.*
Gilia, *Schaff.*: *Lepcha*, *catapyrrha*, *hemichroma*, *Butler*.

Rhodosoma, *Butler*—*trionus*, *Westwood*.

Lophura, *Boisd.*—*asiliformis*, *Fabr.*: *himachala erebina*, *Butler*.

Acosmeryx, *Boisd.*—*cinerea*, *pseudonaga*, *Butler*: *sericea*, *Walker*.

Elibia, *Walker*—*dolichus*, *Westwood*: *dolichooides*, *Felder*.

Pergesa, *Walker*—*acuta*, *velata*, *macroglossoides*, *Walker*: *Aotens*, *Cramer*: *olivacea*, *castanea*, *Moore*: *segrota*, *aurifera*, *gloriosa*, *Butler*.

Panacra, *Walker*—*assamensis*, *Mydon*, *variolosa*, *Walker*: *Bubastus*, *Cramer*: *vigil*, *Guer.-Mén*: *Minaus*, *Fabr.*: *metallica perfecta*, *vagans*, *Butler*.

Angonyx, *Boisd.*—*Automedon*, *Busiris*, *Walker*.

Microptha, *Felder*.—*sculpta*, *Felder*.

Chirocampa, *Duponchel*.—*Alecto*, *Thyelia*, *Celerio*, *Elpenor*, *Linn.*: *Clotho*, *Nessus*, *Drury*: *cretica*, *silhensis*, *Lucasi*, *Boisd.*: *puellaris*, *macromera*, *fratens*, *mirabilis*, *rosina*, *punctivenata*, *gonograpti*, *minor*, *major*, *Butler*: *oldenlandia*, *color*, *Fabricius*: *Butus*, *Drancus*, *Lycus*, *Cramer*: *palliocta*, *lineata*, *Walker*.

Deilephila, *Ochs.*—*lathyrus*, *Walk.*: *livornica*, *Esper.*: *Robertsi*,
Butler.

Daphnis, *Hübner*—*minima*, *Butler*: *Bhaga*, *Moore*: *Nerii*, *Linna.*
Philampelus, *Harris.*—*Naga*, *Moore.*

Ambulyx, *Walker*—*subtrigilis*, *West.*: *maculifera*, *rubricosa*,
Walker: *junonia*, *liturata*, *rhodoptera*, *seri-*
ceipennis, *labora*, *turbata*, *consanguis*, *Butler.*

Mimas, *Hübner.*—*decolor*, *Walker.*

Polyptychus, *Hübner*—*dentatus*, *Cramer*: *timesius*, *Stoll.*

Langia, *Moore*—*zenzeroides*, *khasiana*, *Moore.*

Triptogon, *Bremer.*—*Dyras*, *indicoan*, *Walker*: *decoratum*,
Moore: *cristatum*, *gigas*, *albicans*, *silhetensis*,
oriens, *massurensis*, *fuscescens*, *spectabilis*,
florale, *Butler.*

Daphnusa, *Walker*—*porphyria*, *Butler.*

Leucophlebia, *Westwood*—*lineata*, *West.*: *emittens*, *Walker*: *bi-*
color, *damascena*, *Butler.*

Cypa, *Walker*—*incongruens*, *Butler.*

Clanis, *Hübner.*—*Deucalion*, *bilineata*, *cervina*, *pudorina*, *Walk-*
er: *phalaris*, *Cramer*: *exusta*, *Butler*: *su-*
perba, *Moore.*

Acherontia, *Hübner.*—*Styx*, *West.*: *morta*, *Hübner.*

Protoparce, *Burm.*—*orientalis* (*convolvuli*, *Moore*), *Butler.*

Pseudosphynx, *Burm.*—*nyctiphanes*, *inexacta*, *Fo.*, *Walker.*

Diludia, *Grote*—*grandis*, *melanomera*, *rubescens*, *vates*, *tran-*
quillaris, *Butler.*

Apocalypsis, *Butler*—*velox*, *Butler.*

Hyloicus, *Hübner*—*asiaticus*, *uniformis*, *Butler.*

Nephele, *Hübner*—*hespera*, *Fabr.*

Calymnia, *Walker.*—*Panopus*, *Cramer.*

Tribe—BOMBYCINI

Family—*Egeriida.*

Sphocia, *Hübner*—*repanda*, *contracta*, *Walker.*

Melitina, *Hübner*—*bombyliformis*, *Cramer*: *Buryton*, *West-*
wood.

The following genera found in Bengal also belong to this family:—

Ægeria, *Fabr.*: *Lenyra*, *Walker*: *Pramila*, *Trilochana*, *Moore*:
Sciapteron, *Staudinger*.

Family *Zygonidae*.

Zygena, *Fabr.*—*caschmirensis*, *Kollar*: *Asoka*, *Moore*.

Procris, *Fabr.*—*stipata*, *Walker*.

Syntomis, *Ochs.*—*Schsenherri*, *Hübneri*, *Latreillei*, *Boisduval*:
diaphana, *bicincta*, *Kollar*: *Atereus*, *Cyssea*,
Cramer: *Passalis*, *Fabr.*: *Imaon*, *humeralis*,
diptera, *quadricolor*, *fervida*, *subcordata* *pec-*
toralis, *melas*, *multigutta*, *confinis*, *fusiformis*,
tenuiformis, *cuprea*, *Walker*.

Artona, *Walker*—*discivitta* *Walker*: *zebraica*, *confusa*, *Butler*.

To this family belong the genera:—*Northia*, *Eressa*, *Phacusa*,
Walker: *Notioptera*, *Butler*.

Family *Agaristidae*.

Ægocera, *Latr.*—*Venulia*, *Cramer*: *bimacula*, *Walker*.

Eusemia, *Dalman.*—*adulatrix* (= *bellatrix*, *West.*), *Kollar*: *ma-*
culatrix, *victrix*, *West.*: *basalis*, *Walker*:
Peshwa, *funebri*, *Aruna*, *Moore*: *silhetensis*,
orientalis, *distincta*, *dives*, *sectinotis*, *Butler*.

Nikæa, *Moore*—*longipennis*, *Walker*.

Nyctalemon, *Dalman.*—*Patroclus*, *Linnaeus*.

Vithora, *Moore*—*indrasana*, *Moore*.

The genera *Phægorista*, *Cleosiris*, *Boisd.*, *Seudyra*, *Stretch.*, be-
long to this family.

Family *Chalcostidae*.

Phalauna, *Walker*—*polymena*, *Linnaeus*.

Phanda, *Walker*—*flammans*, *Walker*.

Nepe, *Walker*—*Pardica*, *Walker*.

Milionia, *Walker*—*glauca*, *Cramer*: *sonca*, *lativitta*, *Moore*.

Titymora, *Walker*—*Zaida*, *Walker*.

Pterothysanus, *Walker*—*latialis*, *Walker*.

Episcopa, *Westwood*—*Polydara*, *Philenora*, *Westwood*.

Hestia, *Hübner*—*papilionaria*, *Guenée*: *subelliptica*, *Fabr.*

Cyclosia, *Hübner*—*sanguiflua papilionaris*, *Drury*: *Panthona*, *Cramer*; *Midama*, *Boisduval*.

Erasmia, *Hope*—*pulchella*, *Hope*.

Campylotes, *Westwood*—*histrionicus*, *West.*: *Atkinsoni*, *Moore*.

Chalcosia, *Hübner*—*pectinicornis*, *Linn.*: *tiberina*, *Cramer*:
Adalifa, *phalænaria*, *Walker*: *albata*, *Moore*,
Corusca, *Boisd.*

Pidorus, *Walker*—*glaucopis*, *Drury*: *Zelica*, *Zenotea*, *Doubl.*

Chatamla, *Moore*—*flavescens*, *Walker*: *nigrescens*, *Moore*:
tricolor, *Butler*.

Milleria, *Schaff.*—*metallica*, *gemina*, *fuliginosa*, *Walker*.

Heterusia, *Hope*—*tricolor*, *Hope*: *Edoola*, *sexpunctata*, *Risa*,
Doubl.: *Ædea*, *Linn.*: *pulchella*, *Kollar*:
circinata, *scintillans*, *Boisd.*: *shahama*, *Moore*:
magnifica virescens, *dulcis*, *Butler*.

Trypanophora, *Kollar*—*semihyalina*, *Kollar*.

Soritia, *Walker*—*leptalina*, *Kollar*.

Chelura, *Hope*—*bifasciata*, *Hope*: *glacialis*, *Moore*.

Agalope, *Walker*—*basalis*, *Walker*: *glacialis*, *primularis*, *Butler*.

The following genera also belong to this family:—*Philopator*,
Atossa, *Boradia*, *Arachotia*, *Cadphises*, *Canerkes*, *Codane*, *Moore*:
Epyrgis, *Schaff.*: *Scaptesytle*, *Herpa*, *Pintia*, *Laurion*, *Retina*,
Walker: *Amesia*, *West*.

Family *Nyctemeridæ*.

Nyctemera, *Walker*—*lacticinia*, *Cramer*: *maculosa*, *Walker*.

Leptosoma, *Boisd.*—*latistriga*, *Walker*.

The genera *Pitasila* *Arbudas*, *Moore*: *Zonosoma*, *Trypheromera*
Butler, also belong to this family.

Family *Euschemidæ*.

Euschema, *Hübner*—*militaris*, *Linn.*: *Belloua*, *discalis*, *Walker*

Family *Callidulidæ*.

Callidula, *Hübner*—*Petavia*, *Cramer*.

The following genera also belong to this family:—

Merimba, *Datanga*, *Moore*.

Family *Lithosiidæ*.

Pentacitrotus, *Butler*—*vulneratus*, *Butler*.

Doliche, *Walker*—*gelida*, *Walker*.

Cyana, *Walker*—*detrita*, *Walker*.

Miltochrista, *Hübner*—*nubifascia*, *Walker* : *tossellata*, *maotans* *Butler*.

Teulisna, *Walker*—*tetragona*, *Walker* : *sordida*, *Butler*.

Hypsa, *Hübner*—*Alciphron*, *Cramer* : *ficus*, *Fabr.* : *plana*, *Walker* : *senihyalina*, *Kollar* : *heliconia*, *Linn.* : *lacteata*, *Butler*.

Damalis, *Hübner*—*egens*, *Walker* : *caricæ*, *Fabr.* : *juvana*, *Cramer* : *plaginota*, *Butler*.

Digama, *Moore*—*hearseyuna*, *similis*, *Moore*.

Neochera, *Hübner*—*dominia*, *Cramer* : *marmorea*, *Walker* : *tortuosa*, *Moore*.

Tripura, *Moore*—*prasena*, *Moore*.

Sidyra, *Walker*—*albifinis*, *Walker*.

Lithosia, *Fabr.*—*bivitta*, *nigripars*, *conformis*, *Walker* : *vavana* *distorta*, *nigrifrons*, *Moore*.

Manulea, *Wall*—*calanaria*, *Moore*.

Systropha, *Hübner*—*auviflua*, *Moore*.

Bizone, *Walker*.—*Bianca*, *signa*, *peregrina*, *perornata*, *fasciculata*, *guttifera*, *puella*, *Walker* : *adita*, *bellissima*, *Moore* : *pallens*, *Butler*.

Batsine, *Walker*—*defecta*, *effracta*, *Walker* : *pretiosa*, *Moore*.

Nudaria, *Hübner*—*subcervina*, *margaritifera*, *Walker*.

Utethesia, *Hübner*—*pulchella*, *Linn.* : *venusta*, *Hübner* : *cruentata*, *Butler*.

Argina, *Hübner*—*dulcis*, *Walker* : *Astrea*, *Drury* : *Argus*, *Kollar* : *Syringa*, *Cramer*.

The following genera are also found in Bengal :—*Calpenia*, *Moore*; *Eligma*, *Hübner*; *Macrobrechis*, *Schaff.*; *Paraona*, *Churinga*, *Vamuna*, *Mahavira*, *Korawa*, *Hesadra*, *Gheria*, *Moore*; *Chryso-glia*, *Butler*; *Simareca*, *Tarika*, *Gandhara*, *Collita*, *Katha*, *Moore*; *Chryso-rabdia*, *Butler*; *Capissa*, *Dolgoma*, *Mithuna*, *Moore*; *Coasa*, *Walker*; *Banghann*, *Moore*; *Tugalata*, *Walker*; *Nishada*, *Moore* :

Zadadra, Prabhasa, Lyclene, *Moore*: *Æmone*, *Walker*: *Setina*, *Schrank*: *Setinochroa*, *Felder*: *Vitessa*, *Grotea*, *Moore*: *Tinolius*, *Philona*, *Sesapa*, *Pitane*, *Churilina*, *Melanchroia*, *Castabala*, *Agrius*, *Walker*: *Deiopeia*, *Stephens*.

Family *Arctiida*.

Nayaca, *Moore*—*imbuta*, *divisa*, *Walker*: *florescens*, *Moore*: *suttadra*, *Moore*.

Alope, *Walker*—*ocellifera*, *semicinota*, *Walker*.

Phragmatobia, *Stephens*—*exclamationis*, *Stephens*.

Cretonotos, *Hübner*—*interrupta*, *Linn.*: *rubricosta*, *Moore*.

Hypercompa, *Stephens*—*equitalis*, *principalis*, *imperialis*, *leopardina*, *Kollar*: *multiguttata*, *longipennis*, *plagiata*, *Walker*.

Spilosoma, *Stephens*—*transiens*, *rhodophila*, *4-ramosum*, *rubescens*, *suffusa*, *plagiata*, *Walker*: *quadriramosa*, *erythrozona*, *casigneta*, *Kollar*: *flavalis*, *sanguinalis*, *flavicolor*, *similis*, *Moore*.

Aloa, *Walker*—*lactinea*, *Cramer*: *punctistriga*, *candidula*, *diminuta*, *vacillans*, *isabellina*, *comma*, *emittens*, *Walker*.

Spilarctia, *Butler*—*abdominalis*, *Moore*: *lacteata*, *jucunda*, *Nydia*, *confusa*, *Butler*.

The following genera also belong to this family and are found in Bengal:—*Glanycus*, *Diacrisia*, *Areas*, *Numenes*, *Alphæa*, *Amphissa*, *Alpenus*, *Icambosida*, *Anthena*, *Zana*, *Dinara*, *Agrius*, *Amerila*, *Ammatho*, *Amsacta*, *Walker*: *Euchætes*, *Clemens*: *Phissama*, *Carbisa*, *Pomprana*, *Rajendra*, *Challa*, *Moore*.

Family *Liparida*.

Epicopeia, *West*.—*excisa*, *lidderdalii*, *maculata*, *caudata*, *Butler*.

Orgyia, *Ochs*.—*plana*, *bicolor*, *Walker*.

Artaxa, *Walker*—*guttata*, *varians*, *atomaria*, *inconcisa*, *scintillans*, *Walker*: *limbata*, *Butler*: *digamma*, *Boisd.*

Charnidas, *Walker*—*litura*, *Walker*: *cinnamomea*, *ochracea*, *Moore*.

Lælia, *Stephens*—*circundata*, *delineata*, *Walker*.

- Penora, *Walker*—*veniosa*, *Walker*.
- Deroca, *Walker*—*hyalina*, *Walker* : *maculata*, *Moore*.
- Redoa, *Walker*—*submarginata*, *clara*, *Walker* : *Grotei*, *diaphana*, *Moore* : *cymbicornis*, *Butler*.
- Euproctis, *Hübner*—*plana*, *antica*, *divisa*, *virguncula*, *lunata*, *atomaria*, *lutescens*, *varia*, *latifascia*, *gamma*, *Walker* : *xanthorrhæa*, *vitellina*, *chrysolopha*, *Kollar* : *flavonigra*, *Moore*.
- Stilpnotia, *Westwood*—*subtineta*, *sordida*, *Walker* : *sericea*, *Moore*.
- Cispia, *Walker*—*plagiata*, *punctifascia*, *Walker*.
- Dasyochira, *Stephens*—*Apsara*, *Grotei*, *strigata*, *kausalia*, *maruta*, *Moore* : (*Gazalina*) *antica*, *venosata*, *varia*, *Walker* : *niveosparsa*, *Butler*.
- Lymantria, *Hübner*—*lineata*, *munda*, *superans*, *lunata*, *incerta*, *concolor*, *marginata*, *grandis*, *Walker*.
- Asætria, *Hübner*—*sobrina*, *albo'unulata*, *Moore* : *cara*, *Butler*.
- Nagunda, *Moore*—*semicineta*, *Walker*.
- Himala, *Moore*—*argentea*, *Walker*.
- Apona, *Walker*—*cashmirensis*, *Kollar*.

Examples of the following genera belonging to this family are found in India:—Aroa, Repena, Lacida, Arestha, Antipha, Melia, Procodeca, Pantana, Naxa, Odagra, Bazisa, Gazalina, Ricina, Somera, Enome, Somena, Pandala, Nisaga, Pseudomesa, Pida, Mardara, Genusa, *Walker* : *Barygaza*, *Caragola*, *Harapa*, *Heracula*, *Mahoba*, *Daplasa*, *Cadrusia*, *Imaus*, *Locharna*, *Burhona*, *Selepa*, *Dura*, *Pegella*, *Moore* : *Chærotriche*, *Felder* : *Olene*, *Porthetria*, *Psalis*, *Hübner* : *Jana*, *Boisduval* : *Leucoma*, *Porthesia*, *Stephens*.

Family *Notodontidae*.

- Cerura, *Schränk*—*litrata*, *Walker* : *Prasana*, *Moore*.
- Cetola, *Walker*—*dentata*, *Walker*.
- Ramesa, *Walker*—*Tosta*, *Walker*.
- Heterosampa, *Doubleday*—*argentifera*, *Moore*.
- Stenopus, *Germer*—*sikkimensis*, *Moore* : *alternus*, *Walker*.
- Damita, *Walker*—*torquipes*, *Walker*.

Celcia, *Walker*—plusiata, *Walker*: auritracta, *Moore*.

Phalera, *Hübner*—Raya, Sangana, Grotei, tenebrosa, *Moore*: flavescens (?), *Walker*.

Ichthyura, *Hübner*—ferruginea, indica, *Moore*.

Nioda, *Walker*—fusiformis, *Walker*.

Paravetta, *Moore*—discinota, *Moore*.

The following genera found in India belong to this family:—Thiacidas, Mosara, Cleapa, Gluphisia, Rosama, Thosea, Setora, Chilena, Rilia, Nerice, Apela, Ptilomacra, Ceira, Pydna, Berita, Beara, Cyphanta, Gargetta, Sybrida, Dudusa, *Walker*: Menapia, Niganda, Rachia, Danaka, *Moore*: Spatalia, Hoplitis, Pheosia, *Hübner*: Lophopteryx, *Stephens*: Notodonta, *Ochs.*: Anodonta, *Boisduval*.

Family *Psychidæ*.

The genera *Perina*, *Eumeta*, *Walker*, *Psyche*, *Fabr.*, and *Koephene*, *Moore*, belong to this family in India.

Family *Limacodidæ*.

Scoepelodes, *Westwood*—unicolor, venosa, *Walker*.

Notada, *Walker*—basalis, rufescens, *Walker*.

Miresa, *Walker*—albipuncta, *Schäffer*: castaneipars, *Moore*: guttifera, decedens, inornata, *Walker*.

Nyssia, *Walker*—herbifera, latifascia, *Walker*.

Næra, *Walker*—graciosa, *Westwood*: repanda, bicolor, *Walker*.

Parasa, *Boisd.*—punica, *Boisd.*: lepida, *Cramer*: isabella, *Moore*.

The following genera also belong to this family:—*Messata*, *Momena*, *Susica*, *Contheyla*, *Narosa*, *Neprapa*, *Setora*, *Belippa*, *Walker*: *Limacodes*, *Latreille*.

Family *Lasiocampidæ*.

Lasiocampa, *Schrank*—Aconyta, *Cramer*: trifascia, vittata, substrigosa, decisa, *Walker*: Bhira, *Moore*.

Radhica, *Moore*—flavovittata, *Moore*.

Gastropacha, *Curtis*—casmirensis, sulphurea, velutina, *Kollar*: undulifera, *Walker*.

Brahma, *Pate*—Whitei, conchifera, *Butler*: Wallichii, *Gray*.

Eupterote, *Hübner*—discedans invalida, *Butler*: mutans, lineosa, testacea, imbecillis, *Walker*.

Dreata, Walker—*Hades*, Walker.

Tagora, Walker—*glaucescens*, *undulosa*, *Patula*, *pallida*,
Walker.

Amydona, Walker—*basalis*, *Prasana*, *varia*, Walker.

Lebeda, Walker—*latipennis*, *nobilis*, *plagifera*, *recta*, *opponens*,
plagiata, *concolor*, Walker : Buddha, Lefebvre :
Liddordalii stigmata, Butler.

Gangarides, Moore—*rosea*, Walker : Dharma, Moore.

Trabala, Walker—*Vishnu*, Lefebvre : Mahasanda, Moore.

The following genera also belong to this family:—*Oeona*, *Mus-tilia*, *Suana*, *Andraca*, *Apha*, *Ganisa*, Walker : *Estigena*, *Murlida*, *Mahanta*, *Chatra*, *Arguda*, *Bharetta*, *Taragama*, *Alompra*, Moore : *Odonestia*, Germar : *Eutricha*, *Metanastria*, Hübner : *Jana*, Schaff. : *Sphingognatha*, Fereld : *Pæcilocampa*, *Trichiura*, *Clisiocampa*, Stephens : *Pachyjana*, *Leptojana*, Butler.

Family *Bombycidae*.

Bombyx, Fabr.—*Huttoni*, Westwood, cultivated at Mussooree by
Captain Hutton : *textor*, *Crossi*, *fortunatus*,
sinensis, *affinis*, Hutton : *Mori*, Linn.

Ocinara, Walker—*lactea*, *Comma*, Hutton : *Lida*, *diaphana*,
Moore.

Theophila, Walker—*bengalensis*, Hutton, *Huttoni*, west. : *Sher-illii*, Moore : *religiosa*, Helfer.

Family *Drepanulidæ*.

Drepana, Schrank.—*birra*, *Patrana*, Moore.

Oreta, Walker—*extensa*, *obtusa*, Walker : *Pavaca*, *Vatama*,
Moore.

Cania, Walker—*sericea*, Walker.

Apona, Walker—*pallida*, Walker.

The genera *Cifuna* and *Arna*, Walker, also belong to this family.

Family *Saturniida*.

Oricula, Walker—*trifemestata*, Helfer : *drepanoides*, Moore.

Atlas, Linn.—*Atlas*, Linn. : *ricini*, Jones : *Edwardii*, White :
Canningi, Hutton : *Silvestris*, Helfer :
Guerinii, Moore.

Philosamia, *Grote*—*lunula*, *Walker*.

Antherma, *Hübner*—*Mylitta*, *Drury*: *Boylei*, *Frithii*, *mezankooria*, *Helferi*, *Moore*: *nebulosa*, *Hutton*: *Assama*, *Helfer*.

Caligula, *Moore*—*Simla*, *Westwood*: *Cachara*, *Moore*.

Actias, *Leach*—*Selene*, *Macleay*, *Leto*, *Mænas*, *Doubl*.

Saturnia, *Schränk*.—*Anna*, *Atkinson*: *Iole*, *West*: *Grotei*, *Lindia*, *Cidosa*, *Moore*.

Neoris, *Moore*—*Huttoni*, *Shadulla*, *Moore*.

Loepa, *Moore*—*Katinka*, *Westwood*: *sivalica*, *Hutton*, *miranda sikkima*, *Moore*.

Rinaca *Walker*—*Zuleika*, *Hope*: *extensa*, *Butler*: *Thibeta*, *West*.

Family *Cossidæ*.

Cossus, *Fabr*.—*Cadambæ*, *cashmiriensis*, *Moore*.

Zenzera, *Latr*.—*Mineus*, *Asylus*, *Cramer*: *indica*, *Schaff*: *signata*, *pusilla*, *conferta*, *Walker*: *multistrigata*, *Moore*.

The genera *Phragmatæcia*, *Newman*, and *Rhodia*, *Moore*, belong to this family.

Family *Hepialidæ*.

Phassus, *Stephens*—*signifer*, *Walker*: *Aboe*, *Moore*.

Hepialus, *Fabr*.—*nepalensis*, *indicus*, *Stephens*.

Tribe—*Noctuæ*.

Family *Cymatophoridaæ*.

Thyatira, *Ochs*.—*Batis*, *Linn*.: *albicoستا*, *decorata*, *Moore*.

Risoba, *Moore*—*obstructa*, *repugnans*, *Walker*: *prominens*, *literata*, *basalis*, *vialis*, *confluens*, *Moore*.

Ozica, *Walker*—*undulata*, *Moore*.

The genera *Habrosyne*, *Palimpsestis*, *Hübner*, *Kerala*, *Sarenaga*, *Pitrasa*, *Tyrracona*, *Sydina*, *Moore*, also belong to this family.

Family *Bryophilidæ*.

Bryophila, *Trinitatis*—*albistigma*, *literata*, *nilgiria*, *mediana*, *modesta*, *Moore*.

Family *Bombycoidea*.

Diptera, *Ochs.*—atrovirens, prasinaria, vigena, nigroviridis,
Walker: discibrunnea pallida, *Moore*.

Acronycta, *Ochs.*—pruinosa, *Guénée*: flavala, indica, bicolor,
Moore.

The genera *Gaurena*, *Walker*, and *Triæna*, *Hübner*, belong to this family.

Family *Leucaniidea*.

Mythimora, *Hübner*—eervina, *Moore*.

Leucania, *Ochs.*—extranea, exsanguis, *Guénée*: bistrigata, penicillata, modesta, lineatipes, adusta, subsignata, Compta, consimilis, nainica, albistigma, Howra, rufistrigosa, abdominalis, Dharma, albicosta, canarica uniformis, griseofasciata, prominens venalba sinuosa, rufescens, nigrilineosa, *Moore*: Loreyi, *Dup.*: collecta, exterior, proscripita, denotata, bivitata, sejuncta, confusa, decissima, designata, *Walker*.

Axyia, *Hübner*—renalis, fasciata, irrorata, albivena, *Moore*.

Leucophlebia, *Westwood*—lineata, *Westwood*.

Tympanistes, *Moore*—testacea, *Moore*.

Achmis, *Hübner*—sikkimensis, *Moore*.

The genera *Eschæta*, *Walker*, *Aletia*, *Hübner*, *Borolia*, *Moore*, *Simyra*, *Ochs.*, *Sesamia*, *Guén.*, also belong to this family.

Family *Glottulida*.

Chasmina, *Walker*—Cygnus, *Walker*.

Polytela, *Guénée*—gloriosæ, *Fabr.*: florigera, *Guénée*.

Glottula, *Guénée*—dominica, *Cramer*.

Calymera, *Moore*—picta, *Moore*.

Family *Gortyniidea*.

Gortyna, *Ochs.*—cuprea, *Moore*.

Hydroneis, *Guénée*—axioides, khasiana, *Moore*.

Family *Xylophagiidea*.

Xylophasia, *Stephens*—leucostigma, *Moore*.

Spodoptera, *Guénée*—nubis, albana, *Guénée*.

Prodenia, *Guénde*—*retina*, *oiligera*, *Guénde*: *infecta*, *subterminalis*, *declinata*, *insignata*, *glauoistriga*, *Walker*.

Chiripha, *Walker*—*involuta*, *Walker*.

The genera *Dipterygia*, *Calagramma*, *Neuria*, *Guénde*: *Rhizogramma*, *Led.*: *Sasunaga*, *Karuna*, *Moore*: *Thalpophila*, *Hübner*, also belong to this family.

Family *Episemiida*.

Heliophobus, *Boisduval*—*dissectus*, *Walker*.

Family *Apamiida*.

Apamea, *Ochs.*—*cuprina*, *pannosa*, *latifasciata*, *mucronata*, *strigidisca*, *basalis*, *nubila*, *sikkina*, *denticulosa*, *obliquiorbis*, *Moore*.

Mamestra, *Ochs.*—*nigrocuprea*, *suffusa*, *culta*, *decorata*, *Moore*: *Stoliczkæ*, *Felder*: *infausta*, *albiflexura*, *Walker*.

Perigea, *Guénde*—*tricycla*, *Guénde*.

The genera *Prospalta* and *Ilattia*, *Walker*: *Luperina*, *Boisd.*: *Pachætra*, *Dup.*: *Celæna*, *Steph.*: *Motama*, *chandata*, *Moore*, belong to this family.

Family *Caradrinida*.

Caradrina, *Ochs.*—*paucifera*, *Walker*: *cubicularis*, *Hübner*: *aronaia*, *delecta*, *Moore*.

Amyna, *Guénde*—*selenampha*, *Guénde*.

Agrotis, *Ochs.*—*aversa*, *correcta*, *basilavivis*, *intracta*, *Walker*: *quadrisigna*, *costigera*, *junctura*, *modesta*, *fraterna*, *placida*, *Moore*.

Spælotis, *Boisd.*—*indiana*, *Guénde*: *undulans*, *Moore*.

Ochropleura, *Hübner*—*venalis*, *spilota*, *Moore*: *flammatra*, *Guénde*.

The genera *Triphæna*, *Graphiphora*, *Ochs.*: *Epilecta*, *Megasema*, *Ochropleura*, *Hübner*: *Tiracola*, *Dadica*, *Moore*: *Heanonassa*, *Walker*: *Acosmetia*, *Stephens*, also belong to this family and are found in Bengal.

Family *Orthosiida*.

Orthosia, *Walker*—*curviplena*, *externa*, *sinens*, *Walker*: *rectivitta*, *Moore*: *erubescens*, *Butler*.

Xanthia, *Guénde*—*rufoflava*, *Walker*.

Dabarita, *Walker*—*subtilis*, *Walker*.

Cirrædia, *Guénde*—*variolosa*, *Walker*.

The genera *Ranaja*, *Dimya*, *Moore*, and *Tæniocampa*, *Guén.*, belong to this family.

Family *Cosmiida*.

Cosmia, *Ochs.*—*hypenoides*, *Moore*.

Ipimorpha, *Hübner*—*divisa*, *Moore*.

Family *Hadenida*.

Polia, *Guénde*—*Stevensii*, *Guénde*.

Agriopsis, *Boisd.*—*discalis*, *lepida*, *Moore*.

Euplexia, *Stephens*—*striatovirens*, *discisignata*, *Moore*: *distorta*, *Stephens*.

Eurois, *Hübner*—*crassipennis*, *repugnans*, *Walker*.

Hadena, *Treit.*—*niveiplaga*, *auriplena*, *Walker*: *albinota*, *albidisca*, *auroviridis*, *adjuncta*, *siderifera*, *Moore*.

Berrhæa, *Walker*—*aurigera*, *megastigma*, *Walker*: *olivacea*, *albinota*, *Moore*.

To the same family belong the following genera:—*Phlogophora*, *Ochs.*: *Trigonophora*, *Hübner*: *Sarbanissa*, *Walker*: *Checupa*, *Nikara*, *Hyada*, *Chutapha*, *Appana*, *Moore*: *Dianthecia*, *Boisd.*: *Hecatera*, *Guén.*

Family *Xyliniida*.

Lithomia, *Curtis*: *Xylina*, *Ochs.*: *Lyncestis*, *Walker*: *Callænia*, *Hübner*: *Cucullia*, *Ochs.*: *Jarasana*, *Moore*: and *Calophasia*, *Stephens*, belong to this family and afford examples in Bengal.

Family *Hamerostiida*.

Aphusia, *Walker*—*speiplena*, *Walker*.

Family *Acontiida*.

Xanthodes, *Guénde*—*intersecta*, *stramen*, *transversa*, *Guénde*: *innocens*, *imparata*, *impellens*, *Walker*.

Cunna, *Walker*—*pulchripicta*, *Walker*.

Acontia, *Ochs*—*olivea*, *tropica*, *Guénelé*: *costistigma*, *basifera*, *signifera*, *turpis*, *triradiata*, *maculosa*, *olivacea*, *Walker*: *vialis*, *Moore*.

Euphasia, *Stephens*—*catena*, *Sowerby*.

Churia, *Moore*—*nigrisigna*, *ochracea*, *Moore*.

The genera *Naranga*, *Hiccoda*, *Moore*, belong to this family.

Family *Heliothidæ*.

Heliothis, *Hübner*—*armigera*, *peltigera*, *Hübner*: *perigeoides*, *succinea*, *Moore*.

Raghuva, *Moore*—*confertissima*, *Walker*.

Sophaga, *Moore*—*sinuata*, *Moore*.

Dorika, *Moore*—*sanguinolenta*, *Moore*: *aureola*, *Walker*.

Masalia, *Moore*—*radiata*, *irrorata*, *Moore*.

Pradatta, *Moore*—*Beatrix*, *bivittata*, *decorata*, *modesta*, *artaxoides*, *Moore*.

Curubasa, *Moore*—*lanceolata*, *Walker*: *cruentata*, *calamaria*, *marginata*, *Moore*.

Adisura, *Moore*—*Atkinsoni*, *leucanioides*, *marginalis*, *dulcis*, *similis*, *Moore*.

Family *Anthophilidæ*.

Hydrelia, *Guénelé*—*semilugens*, *Walker*: *conjugata*, *Moore*.

Anthophila, *Ochs*.—*indecisa*, *marginalis*, *hæmorrhoida*, *Walker*.

Tima, *Walker*—*margarita*, *Drury*.

Thalpocharis, *Led.*—*parvula*, *albida*, *roseana*, *trifasciata*, *quadri-lineata*, *divisa*, *bifasciata*, *flavida*, *Moore*.

Acantholipes, *Led.*—*flavisigna*, *nigrisigna*, *hyponoides*, *Moore*.

The genus *Leptosia*, *Guénelé*, belongs to this family.

Family *Erastridæ*.

Erastris, *Ochs*.—*pallidisca*, *marginata*, *albiorbis*, *fusca*, *nubila*, *cidarioides*, *Moore*.

Phothedes, *Led.*—*bipars*, *Moore*.

Bankia, *Guénelé*—*angulifera*, *lativitta*, *erecta*, *renalis*, *basalis*, *obliqua*, *Moore*.

Family *Eriopidæ*.

Callopietria, *Hübner*—*exotica*, *Guénelé*: *repicta*, *duplicans*, *riverialis*, *Walker*.

The genera *Phalga*, *Methorasa*, *Cotanda*, *Lugana*, *Moore*, and *Ægilia*, *Walker*, belong to this family.

Family—*Eurhipidæ*.

Penicillaria, *Guéne*—*nugatrix*, *Guéne*.

Anuga, *Walker*—*constricta*, *Guéne*: *lunulata*, *Moore*.

Varnia, *Walker*—*inæqualis*, *ignita*, *Walker*: *fenestrata*, *Moore*.

The genera *Chlumetia*, *Walker*, and *Eutelia*, *Hübner*, belong to this family.

Family *Placodiidæ*.

The genus *Placodes*, *Boisduval*, of this family is found in India.

Family *Plusiidæ*.

Abrostola, *Ochs*.—*subapicalis*, *Walker*: *anophioides*, *Moore*.

Plusia, *Ochs*.—*Agramma*, *Guéne*: *aurifera*, *Hübner*: (*Anarta*?) *gemmifera*, *verticillata*, *furcifera*, *ciliaris*, *nigrisigna*, *ornatissima*, *extrahens*, *significans*, *integra*, *tetragona*, *Walker*: *reticulata*, *pannosa*, *confusa*, *argyrosigna*, *Moore*.

Euchalcia, *Hübner*, belongs to this family.

Plusiodonta, *Guéne*—*chalsytoides*, *compressipalpis*, *Guéne*: *auripicta*, *Moore*.

Family *Calpidæ*.

Oræsia, *Guéne*—*emarginata*, *Fabr.*: *rectistria*, *Guéne*: *tentans*, *alliciens*, *provocans*, *Walker*.

Calpe, *Treit.*—*ophideroides*, *minuticornis*, *Guéne*: *fasciata*, *Moore*.

Culasta, *Moore*, belongs to this family.

Family *Hemiceridæ*.

Westermannia, *Hübner*—*superba*, *Walker*.

Family *Hyblæidæ*.

Phycodes, *Guéne*—*hirundinicornis*, *Guéne*: *tortricina*, *maculata*, *minor*, *Moore*.

Hydrea, *Fabr.*—*puera*, *Cramer*: *frumentum*, *constellata*, *Guéne*.

Family *Gonopteridæ*.

Cosmophila, *Boisd.*—*xanthindymia*, *Boisd.* : *indica*, *Guéneé*.

Anomis, *Hübner*—*guttanivis*, *Walker* : *fulvida*, *Guéneé*.

Thalatta, *Walker*—*precedens*, *Walker* : *fasciosa*, *Moore*.

Gonotis, *Guéneé*—*labimargo*, *Walker* : *brunnea*, *Moore*.

Targalla, *Walker*—*infida*, *Walker*.

The genera *Rusicada*, *Ossonoba*, *Walker* : *Coarica*, *Falana*, *Moore*, also belong to this family.

Family *Amphipyridæ*.

Nænia, *Stephens*—*cuprea*, *chalybeata*, *Moore*.

Amphipyra, *Ochs.*—*monolitha*, *Guéneé* : *corvus*, *Matsch.* : *cupreipennis*, *Moore*.

The genera *Tambana*, *Mithila*, *Amrella*, *Moore* : *Perinænia*, *Butler* : *Blenina*, *Walker*, belong to this family.

Family *Toxocampidæ*.

Toxocampa, *Guéneé*—*costimacula*, *Guéneé* : *tetraspila*, *Walker* : *phantasma*, *Evers* : *cucullata*, *Moore*.

Plecoptera, *Guéneé*—*reflexa*, *Guéneé*.

Family *Polydesmidæ*.

Pandesma, *Guéneé*—*Queneradi*, *Anysa*, *Guéneé*.

Polydesma, *Boisd.*—*boarmoides*, *scriptilis*, *otiosa*, *Guéneé*.

Family *Homopteridæ*.

Alanis, *Guéneé*—*umbrina*, *albicincta*, *hypophæa*, *glaucinans*, *Guéneé* : *spoliata*, *brevipalpis*, *optatura*, *continna*, *Walker*.

Homoptera, *Boisd.*—*albopunctata*, *infligens*, *solita*, *vetusta*, *Walker*.

The genera *Bamra*, *Oromena*, *Donda*, *Moore*, belong to this family.

Family *Hypogrammidæ*.

Cyclodes, *Guéneé*—*Omnia*, *Van der Haven*.

Briarda, *Walker*—*cervina*, *deccens*, *precedens*, *Walker* : *varians*, *Moore*.

Avatha, *Walker*—*includens*, *Walker*.

Prospalta, Walker—*leucospila*, Walker.

Gadirtha, Walker—*impingens*, *inexacta*, Walker.

Callyna, Guéneé—*sidera*, Guéneé: *monoleuca*, Walker: *semivitta*, Moore.

Family *Catephidæ*.

Cocytodes, Guéneé—*cœrula*, *granulata*, Guéneé: *modesta*, Van der Høven.

Catephia, Guéneé—*linteola*, Guéneé.

Melipotis, Hübner—*tenebrosa*, *strigipennis*, Moore.

The following genera belonging to this family are also represented:—*Anophia*, *Erygia*, *Odontodes*, *Stictoptera*, Guéneé: *Steiria*, *Gyrtona*, *Aucha*, Walker: *Zarima*, *Vapara*, *Sadaroa*, Moore.

Family *Hypocalidæ*.

Hypocala, Guéneé—*rostrata*, *deflorata*, Fabr.: *efflorescens*, *subsatura*, *angulipalpis*, Guéneé.

Family *Catocalidæ*.

Catocala, Ochs.—*unicuba*, *concuba*, *prolifera*, *dotata*, Walker: *Nepcha*, *tapestrina*, Moore.

Family *Erebiidæ*.

Sypna, Guéneé—*albilinea*, *cælisparsa*, *omicronigera*, Walker: *plana*, *replicata*, *floccosa*, *brunnea*, *albovittata*, *pannosa*, *curvilinea*, *rectilinea*, *cyani-vitta*, Moore.

Tavia, Walker—*substruens*, *punctosa*, *dubitaria*, Walker: *catocaloides*, *biocularis*, Moore.

Anisoneura, Guéneé—*hypocyana*, Guéneé.

Oxyodes, Guéneé—*Clytia*, Cramer.

Family *Ommatophoridæ*.

Speiredonia, Hübner—*fiducia*, Zanis (?), Stoll.

Patula, Guéneé—*Macrops*, Linn.: *Boopis*, Guéneé.

Argiva, Hübner—*hieroglyphica*, Drury: *caprimulgus*, Fabricius.

Nyctipao, Hübner—*gemmans*, Guéneé: *albicincta*, Kollar: *crepuscularis*, Linn.: *exterior*, *glaucoptis*, *obliterans*, *conturbans*, Walker.

Ommalophora, Guéneé, also belongs to this family.

Family *Hypopyridæ*.

Spirama, *Guénée*—*helicina*, *Hübner* : *cohærens*, *Walker* : *modesta*, *distans*, *Moore*.

Hypopyra, *Guénée*—*Shiva*, *ossigera*, *unistrigata*, *Guénée* : *vespertilio*, *Fabr.* : *restorans*, *Walker*.

Hamodes, *Guénée*—*aurantiaca*, *Guénée* : *marginata*, *Moore*.

Entomogramma, *Guénée*—*fautrix*, *Guénée*.

The genus *Beregra*, *Walker*, also belongs to this family.

Family *Bendidæ*.

Hulodes, *Guénée*—*Caranea*, *Cramer* : *Drylla*, *saturnioides*, *eriphora*, *Palumba*, *inangulata*, *Guénée*.

Homaxa, *Guénée*—*Clathrum*, *Guénée*.

Family *Ophideridæ*.

Ophideres, *Boisduval*—*plana*, *Walker*.

Othreis, *Hübner*—*fullonica*, *Linn.* : *Cajeta*, *ancilla*, *Cramer*.

Adris, *Moore*—*tyrannus*, *Guénée*.

Mænas, *Hübner*—*Salaminia*, *Cramer*.

Rhytia, *Hübner*—*Cocale*, *hypermnestra*, *Cramer*.

Argadesa, *Moore*—*materna*, *Linnaeus*.

Phyllodes, *Boisd.*—*ustulata*, *consobrina*, *Westwood* : *fasciata*, *Moore*.

Potamophora, *Guénée*—*Manlia*, *Cramer*.

Lygniodes, *Guénée*—*hypoleuca*, *Guénée* : *ciliata*, *Moore*.

Family *Ophiuidæ*.

Sphingomorpha, *Guénée*—*Chlorea*, *Cramer*.

Lagoptera, *Guénée*—*honesta*, *magica*, *Hübner* : *dotata*, *Fabr.* : *elegans*, *Van der Haven*.

Ophiodes, *Guénée*—*separans*, *triphænoides*, *remigioides*, *basisignum*, *Walker* : *trapezium*, *Guénée* : *cuprea*, *adusta*, *indistincta*, *Moore* : *discios*, *Kollar*.

Cerbia, *Walker*—(*Thria*) *fugitiva*, *Walker*.

Ophisma, *Guénée*—*gravata*, *torsilinea*, *lætabilis*, *Guénée* : *certior*, *contenta*, *attacicola*, *Walker*.

Artena, *Walker*—*submira*, *Walker*.

Achæa, *Hübner*—*Melicerte*, *Drury*: *mercatoria*, *Cramer*: *Cyl-
lota*, *Guénde*.

Serrodès, *Guénde*—*Mara*, *Cramer*.

Naxia, *Guénde*—*calorifica*, *circumsignata*, *Guénde*.

Calesia, *Guénde*—*comosa*, *hæmorrhoda*, *stigmolema*, *Guénde*.

Hypætra, *Guénde*—*noctuoides*, *Lilacii*, *Guénde*: *perficiens*,
Walker.

Ophiusa, *Guénde*—*simillima*, *analis*, *fulvotænia*, *arctotænia*,
Guénde: *Achatina*, *Sulz.*: *conficiens*, *prope-
rata*, *tumidilinea*, *frontalis*, *Walker*: *falcata*,
Moore.

Grammodes, *Guénde*—*Mygdon*, *Cramer*: *notata*, *Fabr*.

The genera *Iontha*, *Doubl.*: *Hemeroblemma*, *Athyrma*, *Hübner*:
Fodina, *Guénde*: *Dordura*, *Pasipeda* *Moore*: and *Cotuza*, *Walker*,
also belong to this family.

Family *Euclidiidae*.

Trigonodes, *Guénde*—*Cephise*, *Hyppasia*, *Cramer*: *maxima*,
Guénde.

Family *Remigiidae*.

Remigia, *Guénde*—*Archesia*, *Cramer*: *frugalis*, *Fabr.*: (*Girpa*)
opatura, *optativa*, *Walker*.

Felinia, *Guénde*—*albicola*, *Walker*: *spissa*, *Guénde*.

Tribe—*Pseudo-Deltoides*.

Family *Poaphilidae*.

The genera *Poaphila*, *Borsippa*, *Dierna*, *Iluza*, *Walker*: *Nasaya*,
Tochara, *Moore*: *Phurys*, *Guénde*, belong to this family.

Family *Thermesiidae*.

Sympis, *Guénde*—*rufbasis*, *Guénde*.

Sarys, *Guénde*—*pulverata*, *angulina*, *Guénde*: *Flexus*, *Moore*.

Thermesia, *Hübner*—*signipalpis*, *creberrima*, *reticulata*, *Walker*:
oblita, *Moore*.

Azania, *Walker*—*rubricans*, *Boisduval*.

Selenis, *Guénde*—*abrupta*, *Walker*: *reticulata*, *obscura*, *Moore*.

Marmorinia, *Guénde*—*Singha*, *Shivula*, *Guénde*.

Other genera of this family are *Mecodina*, *Capnodes*, *Hyperna-sia*, *Guénde*: *Ginæa*, *Mestleta*, *Singara*, *Fascellina*, *Walker*: *Dur-dara*, *Baparna*, *Sonagora*, *Hingula*, *Moore*.

Family *Focillidæ*.

Zethes, *Rambuhr*—*hæsitans*, *xylochroma*, *Walker*: *amynoides*, *Moore*.

Cultripalpa, *Guénde*—*partita*, *Guénde*: *indistincta*, *trifasciata*, *Moore*.

Other genera of this family represented in Bengal are *Thyridos-pila*, *Guénde*: *Harmatelia* *Acharya*, *Moore*: *Phalacra*, *Egnasia*, *Saraca*, *Rhæssena*, *Walker*.

Family *Amphigonidæ*.

Lacera, *Guénde*—*Capella*, *Guénde*.

Amphigonia, *Guénde*—*hepatizans*, *Guénde*: *comprimens*, *Walker*.

Tribe—*Delteoides*.

Family *Platydiidæ*.

Episparis, *Walker*—*varialis*, *sejunctalis*, *Walker*: *tortuasalis*, *Moore*.

Family *Hypenidæ*.

Dichromia, *Guénde*—*orosialis*, *trigonalis*, *Guénde*: *quadrallis*, *Walker*.

Rhynchina, *Guénde*—*pionealis*, *Guénde*: *angulifascia*, *Moore*.

Hypena, *Schrank*.—*obductalis*, *narratalis*, *laccessalis*, *ignotalis*, *lacertalis*, *masurialis*, *læsalis*, *abducalis*, *Walker*: *indicalis*, *Guénde*: *ochreipennis*, *tortuosa* *divaricata*, *mediana*, *ophiusoides*, *incurvata*, *cidarioides*, *externa* *flexuosa*, *griseipennis*, *lativitta*, *modesta*, *triangularis*, *occatus*, *obsimilis*, *strigifascia*, *similata*, *umbripennis*, *Moore*.

The genera *Talapa*, *Corcobara*, *Apanda*, *Harita*, *Mathura*, *Moore*, also belong to this family.

Family *Herminidæ*.

Herminia, *Latreille*—*robustalis*, *limbosalis*, *mutacalis*, *fractalis*, *Guénde*: *ochracealis*, *vialis*, *restricta*, *lineosa*, *duplexa*, *Moore*.

Hydrillodes, *Guénde*—lentalis, *Guénde*.

Bertula, *Walker*—hisbonalis, *Walker*: brevivittalis, stigmatalis, vialis, placida, *Moore*.

Bocana, *Walker*—murinalis, renalis, picta, marginata, *Moore*.

The following genera also belong to this family:—*Mastygophora*, *Poey*: *Echana*, *Locastra*, *Hipoepa*, *Lamura*, *Avitta*, *Aginna*, *Lamida*, *Walker*: *Madopa*, *Steph*: *Zanclognatha*, *Led*: *Rivula*, *Guén*: *Cephena*, *Asthala*, *Pasira*, *Bibaeta*, *Moore*.

Tribe—Pyrales.

Family *Pyralidæ*.

Pyralis, *Linn*.—*Mensalis*, *phycidalis*, *Guénde*: *pictalis*, *Curtis*: *lucillaris*, *suffusalis*, *Walker*.

Agastya, *Moore*—*hyblæoides*, *flavomaculata*, *Moore*.

Glossina, *Guénde*—*divitalis*, *Guénde*.

Aglossa, *Latreille*—*dimidialis*, *Guénde*.

The genera *Herculia*, *Stemmatophora*, *Walker*, also belong to this family.

Family *Ennychiidæ*.

Pyrausta, *Schrank*.—*absistalis*, *Walker*.

The genera *Rhodaria* and *Herbula*, *Guénde*, also belong to this family.

Family *Asopidæ*.

Syngamia, *Guénde*—*octavialis*, *Walker*.

Agathodes, *Guénde*—*ostentalis*, *Geyer*.

Leucinodes, *Guénde*—*sigulalis*, *melanopolis*, *Guénde*.

The following genera also belong to this family:—*Desmia*, *Westwood*: *Ædiodes*, *Samea*, *Salbia*, *Asopia*, *Megaphysa*, *Isopteryx*, *Terastia*, *Guénde*: *Daraba*, *Walker*: *Agrotéra*, *Schrank*: *Chnaura*, *Ledeter*.

Family *Hydrocampidæ*.

Oligostigma, *Guénde*—*gibbosalis*, *crassicornalis*, *Guénde*.

Catschista, *Hübner*—*peribocalis*, *Walker*: *magnificalis*, *Hübner*.

Paraponyx, *Hübner*—*affinis*, *linealis*, *Guénde*.

Hydrocampa, *Latreille*—*picalis*, *depunctalis*, *Guénde*.

Family *Spilomelidæ*.

Lepyrodes, *Guénde*—*lepidalis*, (*Diasemia*?) *geometralis*, *Walker*.

Phalangiodes, *Guénde*—*neptalis*, *Hübner*.

Zebronia, *Hübner*—*plutusalis*, *aurolinealis*, *lactiferalis*, *Walker*.

The genus *Pycnarmon*, *Lederer*, belongs to this family.

Family *Margarodidæ*.

Glyphodes, *Guénde*—*stolalis*, *bivitraris*, *diurnalis*, *Guénde*: *actio-*
rionalis, *cæsalis*, *univocalis*, *Walker*.

Phakellara, *Gülding*—*indica*, *Saunders*: *translucidalis*, *Guénde*.

Margaronia, *Hübner*—*conchylalis*, *vertumnalis*, *Guénde*: *psit-*
tacalis, *Hübner*: *leodicealis*, *marthesiusalis*,
phryncusalis, *Walker*.

Pygospila, *Guénde*—*tyresalis*, *costiferalis*, *Guénde*.

Englyphis, *Hübner*—*procopialis*, *Hübner*: *fulvidorsalis*, *Geyer*.

Ilurgia, *Walker*—*defamatalis*, *Walker*.

The following genera of this family are also found in Bengal:—
Maruca, *Walker*: *Synclera*, *Cydalima*, *Pachyarches*, *Sisyrophora*,
Lederer: *Heterodes*, *Filodes*, *Guénde*.

Family *Botididæ*.

Astura, *Guénde*—*obrinusalis*, *Walker*.

Botyodes, *Guénde*—*asialis*, *Guénde*.

Botys, *Latreille*—*pectinicornalis*, *sabelialis*, *multilinealis*, *sellalis*,
Guénde: *caldusalis*, *scinialis*, *tullalis*, *caldu-*
salis, *caletoralis*, *iopasalis*, *monesusalis*,
illialis, *rutilalis*, *Æmealis*, *amyntusalis*,
Walker.

Ebulea, *Guénde*—*europasalis*, *Walker*.

To this family also belong *Scopula*, *Schrank*: *Godara*, *Guénde*:
and *Dyssallacta*, *Lederer*.

Tribe—*Geometres*.Family *Urapterididæ*.

Urapteryz, *Leach*—*podaliriata*, *Guénde*: *multistrigaria*, *Walker*:
margaritata, *Moore*: *crocepterata*, *Kollar*.

Chorodna, *Walker*—*erebusaria*, *muricolaria*, *rectata*, *Walker*.

Dalima, *Moore*—*apicata*, *schistacearia*, *Moore*.

Cimicodes, *Günée*—*castanearia*, *cruentaria*, *Moore*.

Other genera are *Euchera*, *Hübner*: *Charodes*, *Günée*: *Lagyra*,
Anzoa, *Walker*.

Family *Eunoimidæ*.

Drepanodes, *Günée*—*circulitaria*, *Walker*: *argenteilinea*, *Moore*.

Hyperythra, *Günée*—*luteata*, *trilineata*, *Moore*.

Eurymene, *Dup.*—*inustaria*, *Moore*.

Crocalis, *Treit.*—*lentiginosaria*, *angularia*, *Moore*.

The following Indian genera also belong to this family:—*Luxiaria*, *Litbada*, *Erebomorpha*, *Lycimna*, *Decetia*, *Omiza*, *Walker*:
Cautoloma, *Lederer*: *Angeroma*, *Panisala*, *Agnidra* *Garcus*, *Moore*:
Odontoptera, *Stephens*: *Selenia*, *Hübner*: *Endropia*, *Günée*: *Eunomos*, *Treitschke*.

Family *Enochromiidæ*.

Mergana, *Walker*—*æquilinearia*, *restitutaria*, *Walker*.

The genus *Corotia*, *Moore*, also belongs to this family.

Family *Amphidasididæ*.

The following genera belong to this family:—*Amphidasys*,
Günée: *Bazura*, *Walker*.

Family *Boarmiidæ*.

Hemerophila, *Stephens*—*maurasia*, *creataria*, *Günée*: *objectaria*,
Walker: *basistrigaria*, *Moore*.

Clæra, *Curtis*—*venustularia*, *Walker*: *finbriata*, *pannosaria*,
Moore.

Boarmia, *Treitschke*—*alienaria*, *reparata*, *Walker*: *perspicuata*,
contiguata, *Moore*.

Tephrosia, *Boisdual*—*scriptaria*, *mucidaria*, *Walker*: *dentilipeata*,
Moore.

Hypochroma, *Günée*—*viridaria*, *varicoloraria*, *tenebrosaria*,
Moore.

The following genera also belong to this family:—*Bargosa*,
Walker: *Xandrupes*, *Moore*: *Amblychia*, *Ophthalmodes*, *Elphos*,
Günée: *Gnophos*, *Treitschke*.

Family *Geometridæ*.

Geometra, Linn.—*avicularia* Guénde : *dentata*, *usta*, *Walker* :
albiviridis, *Moore*.

Thalassodes, Guénde—*cælataria*, *dissimulata*, *dissita*, *Walker* :
sinuata, *Moore*.

The following genera also belong to this family :—*Thalera*,
Comibæna, *Hübner* : *Berta*, *Walker* : *Loxochila* *Nemoria*, *Butler* :
Agathia, *Guénde*.

Family *Palyadidæ*.

The genus *Eumelea*, *Duncan*, belongs to this family.

Family *Ephyriidæ*.

Anisodes, Guénde—*pluristriaria*, *Walker* : *sanguinaria*, *diffusa*-
ria, *Moore*.

Family *Acidaliidæ*.

The following genera belong to this family and are found in
Bengal :—*Hyria*, *Stephens* : *Acidalia*, *Treitschke* : *Timandra*, *Dupon-*
chel : *Drapetodes*, *Trygodes*, *Somatina*, *Argyris*, *Guénde*.

Family *Microniidæ*.

Micronia, Guénde—*fasciata*, *Cramer* : *gannata*, *Guénde* : *simpli-*
ciata, *Moore*.

The genera *Myrteta*, *Walker*, and *Crosia*, *Guénde*, also belong to
this family.

Family *Caberiidæ*.

The genus *Cabera*, *Moore*, belongs to this family.

Family *Mucariidæ*.

Macaria, *Curtis*—*metagonaria*, *emersaria*, *permotaria*, *myandaria*,
Walker : *eleonaria*, *Cramer*.

Krananda, *Moore*—*semihyalina*, *Moore*.

Family *Fidoniidæ*.

Osicearda, *Walker*—*alienata*, *Walker* : *trinitaria*, *Moore*.

Sterrha, *Hübner*—*sacraria*, *Linn*.

The following genera also belong to this family :—*Aspilotes*,
Treitschke : *Zonia*, *Moore* : *Nobilis*, *Docirura*, *Marcata*, *Cyrtilia*,
Walker.

Family *Zerentidae*.

The following genera belong to this family:—*Rhyparia*, *Hübner*: *Percnia*, *Guénde*: *Nelcynda*, *Walker*: *Abraxas*, *Leach*: *Vindusara*, *Moore*.

Family *Larentiidae*.

Larentia, *Duponchel*—*ærata*, *Moore*: *fissiferata*, *Walker*.

Scotosia, *Stephens*—*miniosata*, *atrostipata*, *dubiosata*, *Walker*:
obliquisignata, *venimaculata*, *Moore*.

Psyra, *Walker*—*cuneata*, *Walker*: *similaria*, *Moore*.

Cidaria, *Freitschke*—*interplagata*, *Guénde*: *inextricata*, *Walker*:
signata, *viridata*, *Moore*.

The following genera also belong to this family:—*Oporabia*, *Stephens*: *Eupithecia*, *Curtis*: *Sauris*, *Coremia*, *Guénde*: *Melanippe*, *Duponchel*: *Anticlea*, *Stephens*: *Arichauna*. *Gandarites*, *Moore*.

Family *Euboliidae*.

The genus *Anaitis*, *Duponchel*, belongs to this family.

Tribe—*Orambices*.Family *Galleriidae*.

Propachys, *Walker*—*nigrivena*, *Walker*: *linealis*, *Moore*.

Apsarasa, *Moore*—*radians*, *Westwood*.

The genus *Toccosida*, *Walker*, also belongs to this family.

Family *Crambidae*.

Brihaspa, *Moore*—*atrostigmella*, *Moore*.

The following genera also belong to this family:—*Ramila*, *Moore*: *Crambus*, *Apurima*, *Acara*, *Eschata*, *Walker*: *Schænobius*, *Scirpophaga*, *Calamotrepha*, *Zeller*.

Tribe—*Tortricæ*.Family *Nycteolidae*.

The following genera belong to this family:—*Hylophila*, *Hübner*: *Tyana*, *Aphusia*, *Walker*.

Family *Tortricidae*.

Ceras, *Walker*—*atipatana*, *onastana*, *Walker*.

The genus *Æmene*, *Walker*, also belongs to this family.

Tribe—Tineines.Family *Tineidæ*.

Adela, Walker—*gemmella*, *griscella*, *Walsing*.

To this family belongs the following genera:—*Tinea*, *Stainton*:
Porsica, *Alavona*, *Hapsifera*, *Walker*.

Family *Hyponomentidæ*.

Hyponomeuta, *Zell*.—*lapidellus*, *Walsing*.

Psecadia, *Zell*.—*erminocella*, *hockingella*, *Walsing*.

To this family belongs the following genera:—*Atteva*, *Walker*:
Anesychia, *Hübner* *Lampronia*, *Zeller*.

Family *Plutellidæ*.

To this family belongs the genus *Cercostoma*, *Latreille*.

Family *Gelechiidæ*.

To this family belong the following genera:—*Depressaria*,
Haw.; *Binsitta*, *Walker*: *Parasia*, *Dupouchel*: *Anarsia*, *Golechia*,
Æcophora, *Zeller*: *Butalis*, *Treit*.

Family *Gracillaridæ*.

To this family belong the following genera:—*Gracillaria*, *Coris-*
cium, *Oruix*, *Zeller*.

Family *Elachistidæ*.

To this family belong the following genera:—*Cosmopterix*,
Hübner: *Atkinsonia*, *Lozostoma*, *Stainton*.

Family *Lithocolletidæ*.

The genus *Lithocolletis*, *Zeller*, belongs to this family.

Family *Lyonetidæ*.

The genus *Phyllocnistis*, *Zeller*, belongs to this family.

HYMENOPTERA.

The order Hymenoptera (membrane joined-winged) comprises the insects commonly known as ants, bees, wasps, saw-flies and ichneumons, and is distinguished by the posterior wings being furnished with hooks by which they are joined on to the posterior margin of the fore-wings and thus become united for the purpose of flight. The Hymenoptera undergo a complete metamorphosis. The body is composed

of the usual three parts, head, thorax and abdomen. The head is furnished with a mouth, eyes and antennæ. The mouth is formed for mastication or prehension, except in the bees, in which a suctorial apparatus is developed. The mouth is furnished with mandibles, maxillæ and an upper and under lip and four palpi or feelers, two maxillary and two labial. The under jaws and under lip are generally long and narrow, fixed deep in the cavity of the head by lengthened muscles, somewhat tubular at their lower portion and often folded at their extremity and serving rather for the transmission of nutritive juices than for mastication properly so-called. The true eyes are compound, but in addition all are provided with three simple eyes or ocelli. The antennæ are usually thread-like or hair-like, but vary in form in the different families, and often in the individuals of different sexes in the same species. There are four membranous wings of homogeneous texture, and usually veined instead of reticulated. The posterior pair are usually smaller than the anterior pair, and all are, as a rule, transparent, though some species possess clouded or spotted wings. The thorax is divided into three segments, to which are attached the legs. The first segment is very short, and the two others are closely united. In one division the trochanters of the legs are attached to the femora by a single articulation, and in the other division by two joints. The tarsi or feet are five-jointed. The abdomen consists of 5-9 segments attached to the thorax either by its entire breadth (sessile) or by a slender stalk (pedicled). The female is furnished with an appendage called an ovipositor or egg-placer, which in some species, provided with a poison sac and gland, can be converted into a weapon of offence or defence. The larvæ of the Hymenoptera resemble little worms: where the food is around them they are white, fat, legless grubs; but where, like the larvæ of butterflies, they have to feed on leaves and the like, they develop thoracic or true legs and a number of false or abdominal legs adapted to their mode of life. Most of the larvæ enclose themselves in a cocoon before they undergo the change into the pupa state. The apodal larvæ feed on insects provided for them by their mother, who either carries the food to her young or lays her eggs in the larvæ of some other species that supplies in its living body sufficient nourishment for her young. Amongst bees, the neuter acts as nurses to the helpless young, and are careful,

accurate and patient attendants. The perfect insects of the order live, for the most part, on vegetable substances.

The insects of this order are distributed into two great divisions :

Classification. (1) *Aculeata*, in which the trochanter is attached to the femur by a single joint and the ovipositor is provided with a poison gland ; (2) *Terebrantia* (*Ditrocha*) in which the trochanter is attached to the femur by a double articulation and the ovipositor is not used as a weapon of defence. This latter division is susceptible of a further separation into *Securifera* and *Spiculifera*, explained below. The distribution of the families will then be as follows :—

I.—ACULEATA.

- a. *Heterogyna*—social and solitary ants.
- b. *Fossores*—sand-wasps.
- c. *Diploptera*—true wasps.
- d. *Anthophila*—bees.

II.—TEREBRANTIA.

A. **SECURIFERA**, in which the abdomen is joined to the thorax by its entire width and the larvæ have legs and live on vegetable juices and the ovipositor forms either a short-saw or exerted borer.

- a. *Tenthredinidæ*—saw-flies.
- b. *Siricidæ*—borers.

B. **SPICULIFERA**, in which the abdomen is joined to the thorax by a stalk, the larvæ are legless and live on animal food (except some gall-insects).

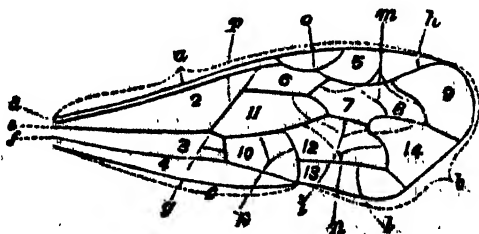
- a. *Cynipidæ*—gall-flies.
- b. *Chalcididæ*—chiefly parasites on insects.
- c. *Proctotrypidae*—chiefly parasites.
- d. *Evanidæ*—parasites on cockroaches.
- e. *Bracoidæ*—parasites on insects.
- f. *Ichneumonidæ*—parasites on insects.

The number of known species has been estimated at 17,000, but the actual number in existence must be four times as great:

The structure of the wings and the nature and number of the nervures and of the cells or intermediate spaces and their ramifications has served as the basis of classification in the system of Jurine and may be briefly noticed. The wings have few nervures, and when they are present they proceed from the base or the costa towards the apex which they may or may not reach. The marginal and sub-marginal nervures are the more important and the discoidal and lanceolate cells. As observed by a writer on this subject, the arrangement of the nervures, though showing great diversity in form, is, within certain limits, remarkably constant. Their use in classification does not lead to the formation of artificial groups, for we find that the existence of a particular arrangement of the nervures in a hymenopterous insect denotes the presence of other characters. The neuration differs, however, in every family and even in the genera of the same family, and the terminology in general use may be gathered from the explanations attached to the following figures:—

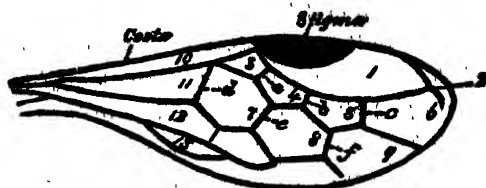
FIG. A.

Explanation—Wing 1, marginal cells: 2, appendicular cell: 3 to 6, sub-marginal cells: 7 to 9, discoidal cells: 10, costal cell: 11, 12, humeral cells, and 13, lanceolate cell: a, b, c, sub-marginal nervures: d, basal nervure: e, f, recurrent nervures.



Explanation—a, costal (radial) nervure; b, apical margin; c, posterior margin; d, post-costal (cubital) nervure; e, externo-medial (brachial) nervure; f, anal (brachial) nervure; g, transverso-medial nervure; h, radial nervure; i, cubital nervures; j, k, discoidal nervure; l, subdiscoidal nervure; m, sub-marginal nervures; n, recurrent nervures; o, stigma; and p, basal nervures: 1, costal cell; 2 to 5, humeral (brachial) cells, external, intermediate and internal; 6, marginal (radial) cell; 7 to 9, first to fourth sub-marginal (cubital) cells; 10, 11, 12, 13, discoidal cells, internal, intermediate and external; 14, posterior cell, internal and external.

FIG. B.



Explanation—1, marginal; 2, appendicular; 3 to 6, sub-marginal; 7 to 9, discoidal; 10, costal; 11, 12, branchial, and 13, lanceolate cellules. a, b, c, sub-marginal nervures; d, basal nervure; e, f, recurrent nervures (Enc. Brit.)

The numerous species of ants existing in India will well repay examination. The common black ant (*F. compressa*, Fabr.) of our gardens, with its numerous society and its army of wingless neuters, can be observed in almost every town. The red ant (*F. smaragdina*, Fabr.) of the mango groves is also easily found. It makes its nest far up in the branches from the living leaves by drawing them together and attaching them to each other by a fine web which is spun from the mouth of the workers. The red ants are the most fierce and quarrelsome of the whole tribe, and attack not only the black ants but also foreign colonies of their own species. In some parts they are used to get rid of colonies of wasps, and for this purpose a branch of the mango tree bearing a red ant's nest is carefully cut down and carried to the neighbourhood of the wasps' nest. The latter seem to be at once aware of their danger and fight desperately, but in the end they fall an easy prey to the red ant, who, not satisfied with its victory, attacks in its blind rage every living thing that approaches it, and in some species its bite is very severe. The bodies of the winged females of this species are of a fine apple-green colour. A minute brown species is often found near the foot of a *pipal* or *sim* tree where white ants have made their galleries, and if this protection be removed, the small ants soon enter in myriads and bring back between every two or three, a fat, struggling white ant, and if the operation be repeated often enough, the latter will cease to infest that particular tree. A rufous species (*F. longipes*, Jerd.) occupies holes in the ground in jungly tracts and frequently announces its presence to those who incautiously sit down near its haunts by inflicting a sharp stinging bite. Another species affecting similar localities is that happily named *F. procumbens*.

by Jerdon. It is sometimes to be seen forming dense columns many yards long in full march from one part of a forest to another. Dead beetles, drowned flies and other insects are all carried off by ants who sometimes make sad havoc, in a single night, in a collection of insects not properly protected. Close to the true ants come the *Dorylida*, of which one species makes its nest in the floor or walls of houses and lives in societies, swarming at certain seasons. In the genus *Myrmica*, the ant is provided with a sting with which it can produce a troublesome swelling. The family *Mutillida*, which is joined by most authors to the *Formicida*, contains certain small brightly coloured solitary insects of which the females resemble the neuters of ants in being wingless. So far as is hitherto known they are found only as parasites on humble-bees.

The tribe *Fossores*, or diggers, comprise species resembling the ants as well as others having the appearance of true wasps and some peculiar to the tribe. They are carnivorous in their habits and excavate celled chambers in the ground and even in wood or walls in which to store up food for their larvæ. The food consists of insects benumbed by the poison of their sting, and in this state of lethargy capable of living for months and furnishing the young *fossor* with its natural food, the living tissue of other insects. The sand-wasps, mason-wasps, and house-wasps belong to the same tribe. The true wasps are distinguished from the *Fossores* by having their wings disposed longitudinally when in repose, while the eyes are reniform and reach to or near to the base of the mandibles. Some are social in their habits and all are carnivorous. The false wasps (*Odynerus*) belong to this section as well as *Eumenes*. Amongst the true wasps (*Vespida*) there are males, females and neuters or workers living in societies more or less permanent. Many of them construct their nests of papyraceous substances, and it is in one species of this tribe that Siebold discovered that the males originated by parthenogenesis from infecundated eggs. To the bees belong the humble-bee, carpenter-bee, mason-bee and the honey-bee, all of which live on vegetable substances. *Chalicodoma semivestita* builds exactly the same sort of ovary and nest on walls as its European representative, and several species of *Mayactis* have the same leaf-cutting habit as elsewhere. Of the carpenter-bee (*Xylecopa*) there are many examples, and three species known collectively as *Maurus*

are common in the Kumaon forests, where they do much damage to timber. The larger of the three attacks the wood-work of buildings and the dead-wood of felled timber ; whilst the brown species lives in colonies and bores into living trees where it constructs its six-celled abode. The third species is the smallest, but is also the most numerous and lives in societies and specially selects the *haldu* (*Adina cordifolia*) as its home. The *bhaonra* when enraged is, as noted by Moorcroft, a very formidable antagonist, and occasionally causes much suffering to men and cattle from its sting. The species of honey-bee are not numerous and the workers differ from each other very little in appearance. It is only when the two sexes and their workers are compared that specific distinctions can be well established. *A. dorsata* (Fabr.) suspends its comb from the branches of trees without any outward protection, and is one of the more common Indian species, but variable in appearance. In some places the male is reddish yellow with the upper portion of the thorax, the scape of the antennæ and the outside of the posterior tibiæ and metatarsus black. In the workers the abdomen is yellow with the apex more or less dusky or only with the two basal segments yellowish red. *A. indica* (Fabr.) is, however, the more common and is somewhat smaller than the honey-bee of Europe. It is kept by the villagers in Kumaon in a hive made out of a log of wood and let into the wall of the owner's dwelling. The inner side is closed by a sliding door and the outer has a small opening to permit the entrance and exit of the bees. The bees are driven out by knocking on the inner side of the hive, and after they have flown the outer hole is stopped and the honey is removed, after which the bees are allowed to return. The honey of the Sor valley collected in this way is in high repute for its richness due to the groves of *Bassia butyracea*, on the flowers of which the bees feed. In many places the honey produced by wild bees is equally good, but in others it produces a sort of intoxication very distressing whilst it lasts. The Bhábar honey is therefore not much sought after unless collected by experienced and trustworthy hands.

The *Tenthredinidae* or saw-flies and *Siricidae* or borers are very numerous in species and individuals. The former are provided with a double saw with which the female pierces the leaves or bark of plants to secure a place for her eggs. The larvæ resemble those

of the Lepidoptera, the chief difference being that they have six or more pair of membranous legs, whilst the larvæ of the butterfly have never more than five. One species frequently attacks the pine and destroys it by removing the leaves: another infests the rose and another the imported fruit-trees. The long ovipositor of the *Sirex* enables it to pierce deep down in the bark of the Coniferae in order to lay its eggs and provide a suitable place for its larvæ.

The *Chrysididæ* are small-bodied flies with a shining metallic lustre found as parasites on bees and wasps. The *Cynipidæ* or gall-insects are those that cause galls on the leaves and branches of plants to serve as food and lodgings for its young. An instance may be seen on any of the poplar trees about Naini Tâl and on breaking open the gall, the fat, legless grubs will be found in all stages of growth surrounded by a cottony white substance, the use of which is not known. The *Chalcididæ* comprise an immense number of minute insects having brilliant metallic bodies of a green lustre and which are found as parasites on other insects or on corn. The *Proctotrypidæ* are usually of a brown or red colour and are also parasites. The *Evanidæ* are parasites on cockroaches, and the *Ichneumonidæ* and *Braconidæ* are found as parasites on all orders of insects.

HYMENOPTERA—Ants, bees, wasps.

1. ACULEATA.

Tribe—Heterogyna.

Family *Formicidæ*.

Formica, Linn.—*crinita* (N. I.) *Smith*: *compressa* (In.), *cinerascens* (Mad.), *cylindrica*, *elongata* (Mad.), *conica* (Mad.), *ruficornis*, *gigas*, *abdominalis* (N. I.), *carbonaria*, *Fabr.*: *assimilis* (Mad.), *nana* (Mys.), *rufoglanca* (Mad.), *phyllophila* (Mad.), *stricta* (Mal.), *timida* (Mal.), *vagans* (Mal.), *velox* (Mal.), *longipes* (Teil.) *Jerdon*: *ardens* (Dec.), *impetrosa* (Bom.), *callida* (Dec.), *latea* (N. I.), *gibbosa* (In.), *Smith*: *prismatic*, *sericea*, *quadrilatera* (Mad.), *Major*.

Polyrhachis, *Smith*.—*bihamatus*, *Drury*: *lacteipennis* (N. I.),
Smith: *hastatus* (In.), *sexspinosus* (In.), *relucens* (Mad.), *rastellatus*, *Latr.*: *nidificans*
(Mal.), *sylvicola* (In.), *Jerdon*.

Cecophylla, *Smith*.—*amaragdina* (N. I.), *Fabr.*

Family *Odontomachidæ*, *Mayr.*

Drepanagnathus, *Smith*.—*saltator* (Mad.), *Jerdon*.

Family *Poneridæ*.

Ponera, *Latr.*.—*sculpta* (Mal.), *stenocheilos* (Mal.), *processionalis* (In.), *affinis* (Mal.), *pumila* (Mal.), *Jerdon*:
scalprata (N. I.), *iridipennis* (N. I.), *Smith*.

Family *Myrmicidæ*.

Myrmica, *Latr.*.—*vastator*, *humilis* (Bom.), *bidentata* (Cal.),
rugifrons, *Smith*: *diffusa* (In.), *cæca* (Mys.),
tarda (Mal.), *fodiens* (Mal.) *Jerdon*: *molesta*,
Say.

Myrmecina, *Curtis*.—*pilicornis* (Bom.), *Smith*.

Myrmicaria, *Saund.*.—*brunnea*, *Saund.*: *crinita* (Mad.), *Smith*.

Pseudomyrma, *Guér.*.—*minuta* (Mad.), *rufipes* (Salem), *rufonigra* (Mad.) *nigra* (Mad.), *Jerdon*: *atrata*
(Bom.), *læviceps*, *Smith*.

Crematogaster, *Lund.*.—*Kirbii* (Mys.), *Sykes*.

Atta, *St Farg.*.—*destructor* (In.), *domicola* (Mad., Nellore), *rufa*
(Mal.), *dissimilis* (Mal.), *floricola* (Mad.,
Telli.), *Jerdon*: *instabilis* (N. I.), *Smith*.

Pheidole, *West.*.—*providens* (Poona), *Sykes*: *malabarica* (Mal.),
diffusa (In.), *diversa* (Mys.), *minor* (Mad.),
affinis (Mal.), *quadrispinosa* (Mal.), *Jerdon*.

Family *Cryptoceridæ*.

Meranoplus, *Smith*.—*bicolor* (Mad., Cal.), *Guér.*

Catantopus, *Smith*.—*granulatus*, *Latr.*

Family *Dorylidæ*.

Dorylus, *Latr.*.—*labiatus* (Deo., As.), *longicornis* (Ben.), *Shuck.*:
orientalis (Ben.), *West.*: *hindostanus* (Panj.),
Smith.

Enictus, *Sauck.*—*ambiguus* (Puna), *Shuck.*: *pubescens* (N. I.),
Smith: *certus*, *West.*

Family *Thynnidae*.

Iswara, *West.*—*lutea*, *West.*: *fasciata* (Sind), *Smith.*

Family *Mutillidae*.

Methoca, *Latr.*—*orientalis* (N. I.), *Smith.*

Mutilla, *Linn.*—*indica*, *Linn.*: *glabrata*, *nigripes*, *Fabr.*: *rugosa*,
Oliv.: *6-maculata*; *Swed.*: *bengalensis*, *analis*,
rufogastra (Nep.), *dimidiata*, *St. Farg.*: *an-*
tennata, *argentipes*, *aurifrons*, *blanda*, *dives*,
diversa, *indostana* (Mad.), *Miranda*, *nobilis*
(Mad), *optima*, *opulenta*, *pulchrina* (Mad.),
representans, *reticulata*, *rufiventris*, *semiau-*
rata, *aulica* (N. I.), *pusilla* (N. I.), *funeraria*
(N. I.), *unifasciata* (N. I.), *reg'a*, *Smith*: *indica*,
Linn.

Apterogyna, *Latr.*—*mutilloides*, *Smith.*

Tribe—*Fossorea*.

Family *Scoliadae*.

Myzine, *Latr.*—*dimidiata* (Ben.), *Guér.*: *anthracina*, *petiolata*,
Madraspata, *fuscipennis*, *Smith.*

Tiphia, *Fabr.*—*hirsuta* (N. I.), *rufipes* (N. I.), *rufo-femorata*
(N. I.), *Smith.*

Scolia, *Fabr.*—*4-pustulata* (Mad.), *tubiginosa* *Fabr.*: *caeruleans*,
St. Farg.: *apicicornis*, *apicalis*, *Guér.*:
patricialis, *Burm.*: *Iris*, *Klug*: *erratica*,
instabilis, *pulchra*, *specifica*, *vidua* (Mad.),
venusta, *personata* (As.), *ignita* (As.), *nudata*,
fervida (Bom.), *Smith*: *insignis*, *Saup.*: *bilu-*
nata, (Nep.), *splendida*, *nobilis*, *stizus* (Mad.),
Sauss.

Elis, *Fabr.*—*litigiosa* *rubromaculata*, *eximia*, *habrocoma*, *lucta-*
osa, (As.), *Smith*; *auricollis*, *parvula*, *St.*
Farg.: *marginella*, *Klug*: *thoracica*, *annulata*
quadrifasciata *grossa*, *Fabr.*: *asiatica*, *hir-*
suta, *Sauss.*

Family *Pompilida*.

Pompilius, *Fabr.*—*analis*, *fulvipennis*, *Fabr.* : *comptus*, *dorsalis*, *St. Farg.* : *fenestratus* (Ben.), *honestus*, *Madraspatanus*, *pedunculatus*, *unifasciatus*, *cæruleus* (N. I.), *Smith.*

Priocnemis, *Schödtte*—*luscus* (Mad.), *Fabr.* : *peregrinus* (Cal.), *Smith.*

Agenia, *Schödtte*—*blanda*, (Ben.), *Guér.* : *tinctoria*, *cærulea*, *festinata*, *Smith.*

Popsis, *Fabr.*—*Dyoclene*, *Smith.*

Ferreola, *St. Farg.*—*fenestrata* (Mad.), *Smith.*

Macromeris, *St. Farg.*—*splendida*, *violacea* (As.), *St. Farg.*

Mygymia, *Shuck.*—*flava*, *Drury* : *flavicornis* (Mad.), *Fabr.* : *severa*, *Drury* : *audax* (As.), *fenestrata* (As.), *perplexa* (Mad.), *bellicosa* (Ben.), *sævissima* (Bom.), *intermedia* (N. I.), *Atropos*, *Smith.*

Ceropales, *Latr.*—*flavo-picta*, *fuscipennis*, *ornata*, *Smith.*

Family *Sphegida*.

Ammophila, *Kirby.*—*erythrocephala* (Panj.), *Fabr.* : *basalis* (Panj.), *nigripes* (Mad.), *lævigata* (Mad., Bom.), *dimidiata* (In.), *elegans* (Panj.), *atripes* (Bom.), *punctata* (N. I.), *vagabunda* (N. I.), *Smith.* : *Smithii*, *Baly.*

Pelopæus, *Latr.*—*madraspatanus* (In.), *Fabr.* : *Solieri*, *Spinolæ* (Bom.), *coromandelicus*, *St. Farg.* : *bengalensis*, *Dahl.* : *bilineatus* (Bom.), *pictus*, *separatus* (Bom.), *Smith.*

Chlorion, *Latr.*—*lobatum*, *splendidum* (N. I.), *Fabr.* : *melasoma* (Mad.), *regale* (Sind), *Smith.* : *saneum* (Mad.), *Spin.*

Sphex, *Fabr.*—*argentata* (M.), *Fabricii* (Mad.), *Dahl.* : *ferruginea*, *vicina*, *St. Farg.* : *flavo-vestita*, *Smith.*

Harpactopus, *Smith.*—*crudelis* (Mad.), *nivosus* (N. I.), *Smith.*

Parasphex, *Smith.*—*fervens* (Mad. Bom.), *Fabr.*

Ampulex, *Jurine*—*compressa* (Mal.), *Fabr.*

Trirogma, *West.*—*cærulea* (Mad., N. I.), *West.*

Family *Larrida*.

Larrada, *Leach*.—*aurulenta* (Mad.), *maura* (Mad.), *Fabr.*: *similima*, *conspicua*, *argyrea* (N. I.), *subtesse-lata*, *exilipes* (N. I.), *jaculator* (N. I.), *vestita* (N. I.), *Smith*.

Tachytes, *Panz.*—*nitidulus* (Mad., Panj.), *repandus*, *Fabr.*: *tarsatus*, *fervidus*, *monetarius* (Panj.), *modestus*, *Smith*.

Astata, *Latr.*—*orientalis*, *agilis*, *Smith*.

Pison, *Spin.*—*rugosus*, *Smith*.

Family *Bembicida*.

Bembex, *Fabr.*—*olivacea* (Mad.), *lunata* (Mad.), *Fabr.*: *trepan-da*, *sulphurescens* (Mad., Panj.), *Dahl*.

Family *Nyssonida*.

Larra, *Klug.*—*fasciata* (Mad.), *vespiformis* (Mad., Panj.), *Fabr.*: *Delessertii* (Mad.), *Guér.*: *blandina*, *mela-noxantha*, *mellea*, *nubilipennis*, *rufescens* (Panj.), *cornuta* (Bom.), *Smith*.

Nysson, *Latr.*—*basalis*, *Smith*.

Gorytes, *Latr.*—*pictus* (Mad.), *amatorius*, *tricolor*, *Smith*.

Harpactus, *Shuck.*—*ornatus* (N. I.), *Smith*.

Family *Crabronida*.

Trypoxylon, *Latr.*—*pileatum* (Mad.), *accumulator*, *Smith*.

Oxybelus, *Latr.*—*agilis*, *tridentatus*, *ruficornis*, *sabulosus*, *squa-mosus*, *Smith*.

Crabro, *Fabr.*—*fuscipennis*, *argentatus*, *St. Farg.*: *flavo-pictus* (N. I.), *insignis*, *Smith*.

Family *Cercerida*.

Cerceris, *Latr.*—*interstincta* (Mal.) *Fabr.*: *flavo-picta* (N. I.), *hilaris* (N. I.), *instabilis*, *mastogaster* (Mad.), *orientalis* (Mad.), *vigilans* (Mad.), *fervens* (N. I.), *albopicta* (Bom.), *viscosus*, *rufinodis*, *velox*, *Smith*: *bifasciatus*, *Guér.*

Philanthus, *Fabr.*—*pulcherrimus*, *sulphureus* (N. I.), *depredator*, *elegans* (N. I.), *Smith*.

Tribe—Diptera.

Family Eumenida.

Eumenes, Latr.—*circinalis*, *conica*, *esuriens*, Fabr.: *flavopicta*, Blanch.: *affinissima*, *xanthura*, Edwardsii (Bom.), *Blanchardii* (Mad), *exigua*, *indiana*, *brevirostrata*, *depressa*, *quadrispinosa*, Sauss.

Montezumia, Sauss.—*indica*, Saussure.

Rhynchium, Sauss.—*nitidulum*, *hæmorrhoidale*, *brunneum* (Ben.), *carnaticum* (Ben., Mad.), *argentatum*, Fabr.: *bengalense*, *atrum*, *metallicum* (Mad.), *Mellyi*, *dichotomum*, Sauss.

Odynerus, Latr.—*Sichelii*, *punctus*, *punctatipennis*, *ovalis*, *diffinis*, Sauss.: *intricatus* (Ben.), *guttatus*, Smith.

Family Vespidae.

Belonogaster, Sauss.—*indicus*, Szuss.

Icaria, Szuss.—*marginata* (Mad.), St. Farg.: *aristocratica*, *formosa*, *artifex*, *picta*, Sauss.: *ferruginea* (Mad.), Fabr.: *pendula* (Bareilly), *variegata* (Puna), Smith.

Polistes, Latr.—*hebræus*, *stigma*, Fabr.: *orientalis*, Kirby: *confusus*, Smith: *hoplites*, *sagittarius*, Sauss.

Vespa, Linn.—*orientalis*, Linn.: *cincta* (Mad.), *affinis*, *analis*, *bicolor*, Fabr.: *velutina*, St. Farg.: *auraria* (N. I.), *obliterata* (N. I.), *magnifica* (Mus.), *basalis*, (Nep.), *crabroniformis*, *ducalis*, Smith: *doryloides*, Sauss.

Tribe—Anthophila.

Family Andrenidae.

Prosopis, Fabr.—*mixta*, Smith.

Sphæcodes, Latr.—*fuscipennis* (N. I.), *apicatus*, Smith.

Nomia, Latr.—*crassipes* (Mad.), *curvipes* (Mad.), *strigata*, Fabr.: *basalis*, *iridescens*, *Elliottii*, (Cal., Mad.), *oxybaloides* (Him.), *silhetica*, *capitata* (N. I.), *clypeata*, *fervida* (Dec.), *combusta* (Bom.), *pillipes* (N. I.), *Buddha*, *sykesiana* (Dec.), *West.aurifrons* (As.), *simillima* (Cal.), *scutellata* (Cal.), *thoracica* (Cal.), *antennata* (Bom., Oudh), Smith.

Halictus, *Latr.*—*propinquus* (N. I.), *agrestis* (N. I.), *albescens* (N. I.), *rugolatus* (N. I.), *constrictus* (N. I.), *lucidipennis* (N. I.), *xanthognathus* (N. I.), *fimbriatus* (N. I.), *Smith*.

Cyathocera, *Smith*—*nodicornis* (Cal.), *Smith*.

Andrena, *Fabr.*—*exagens*, *Smith*.

Family *Apidae*.

Lithurgus, *Latr.*—*atratus*, *Smith*.

Chalicodoma, *St. Farg.*—*semivestita*, *Smith*.

Megachile, *Latr.*—*disjuncta lanata*, *Fabr.*: *dimidiata*, *anthracina*, *vestita*, *conjuncta* (Ben.), *umbripennis* (Nep.), *fulvo-vestita* (Bom.), *rufipes*, *imitatrix*, *rufiventris*, *fraterna*, *monticola*, (As.), *carbonaria* (N. I.), *cephalotes* (N. I.), *albifrons* (N. I.), *velutina* (N. I.), *bicolor*, *fasciculata*, *Smith*.

Crocisa, *Jurine*—*Histrio*, *Fabr.*

Ceratina, *Latr.*—*simillima*, *hieroglyphica* (N. I.), *Smith*: *viridis*, *Guér.*

Allodape, *St. Farg.*—*marginata*, *Smith*.

Nomada, *Fabr.*—*solitaria* (N. I.), *decorata* (N. I.), *adusta*, *Smith*: *bipunctata*, *Fabr.*

Cœlioxyx, *Latr.*—*ducalis*, *apicata* (N. I.), *capitata* (N. I.), *argentifrons*, *basalis*, *cuneatus*, *confusus*, *Smith*.

Stelis, *Panz.*—*carbonaria* (N. I.), *Smith*.

Tetralonia, *Spin.*—*Duvaucelii* (Ben.), *St. Farg.*: *floralis*, *elegans*, *Smith*.

Anthophora, *Latr.*—*zonata*, *Linna*: *fasciata*, *bicincta*, *Fabr.*: *violacea*, *sub-cœrulea*, *St. Farg.*: *confusa*, *niveocincta*, *Smith*.

Xylocopa, *Latr.*—*ruficornis*, *fenestrata* (Ben.), *cœrulea*, *Fabr.*: *æstuans*, *Linna*: *latipes*, *Drury*: *verticalis*, *iridipennis*, *viridipennis*, *ferruginea* (Ben.), *dissimilis* (Mad.), *collaris* (Ben.), *Olivieri*, *orichalcea*, (Ben.), *auripennis*, (Ben.), *St. Farg.*: *lunata* (Mad.), *indica* (Mad.), *Klug*: *tenuiscapa* (Mad., As.), *West*: *savo-nigrescens* (Ar.), *basalis* (N. I.), *acutipennis* (As.), *provida*, *rufescens*, *ignita* (Ben.), *Smith*.

Bombus, *Latr.*—*tunicatus* (N. I.), *rufo-fasciatus* (N. I.), *hæmorrhoidalis* (N. I.), *funerarius* (N. I.), *similis* (N. I.), *orientalis*, *formosus*, *eximius* (As.), *Smith*.

Trigona, *Jurine*—*vidua*, *St. Farg.*

Apis, *Linn.*—*indica* [= *Delessertii* (Mad.), *Guér.* : *Perrotettii* (*Guér.* : *Peronii*, *socialis* (Ben.), *Latr.*] (In.) ; *dorsalis* [= *zonata*, *Guér.* : *bicolor*, *Klug.* : *nigripennis*, *Latr.*], *florea* [= *lobata* and *reniformis*, *Smith*, and *indica*, *Latr.*], *Fabr.*

Tribe—II.—DITROCHA.

A.—*Securifera*.

Family *Tenthredinidæ*.

Lophyrus, *Fabr.*—*pini* (N.-W. P.), *Linn.*

Hylotoma, *Latr.*—*albocincta* (Nep.), *xanthogaster* (Nep.), *lutea* (N. I.), *bipunctata*, *interstitialis* (Darj.), *simlaensis* (Panj.), *Cameron* : *janthina* (Nep.), *Klug.*

Athalia, *Leach.*—*spinarum*, *Fabr.* : *tibialis*, *Cameron.*

Monophadnus, *Smith*—*cærulescens* (Nep.), *bengalensis* (Ben.), *Cameron.*

Allantus *Smith.*—*trochanteratus* (N. I.), *Cam.*

Pachyprotasis, *Hartig.*—*versicolor* (N. I.), *rapæ*, *albocincta* (Hin.), *Cam.*

Macrophya, *Klug.*—*rotundiventris* (N. I.), *Cam.*

Tenthredo, *S. Str.*—*metallica* (N. I.), *clypeata* (N. I.), *xanthoptera* (Nep.), *indica* (N. I.), *latifasciata*, *simulans*, *Cameron.*

Dolerus, *Smith*—*rufocinctus*, *Cameron.*

Family *Siricidæ*.

Tremex, *West.*—*smithii* (N. I.), *Cameron.*

Sirex, *Fabr.*—*xanthus* (N. I.), *Cameron.*

B.—*Spiculifera*.

Family *Chalcididæ*.

Leucospis, *Fabr.*—*atra* (Mad.), *Fabr.*

Chalcis, *Fabr.*—*Amphias* (Nep.), *Walt.*

Schizaspidia, *West.*—*furoifer* (Ben.), *West.*

Family *Chrysididae*.

Stilbium, *Spin.*—splendidum, *Fabr.*

Hedychrum, *Latr.*—timidum, *Dahl.*: rugosum, *Smith.*

Parnopes, *Latr.*—viridis (Mad.), *St. Farg.*

Pyria, *St. Farg.*—oculata, *Fabr.*

Chrysis, *Fabr.*—oculata, amethystina, *Fabr.*: pubescens (Bom.),
Smith.: dissimilis, Rechei, orientalis exulans,
Schiödtei, *Dahl.*: fuscipennis, *Brulle.*

Family *Evaniadae*.

Megischus, *Br.*—coronator, *Fabr.*

Stephanus, *Jur.*—indicus (Mad.), *West.*

Evania, *Fabr.*—laevigata, *Latr.*: antennatis, *West.*

Family *Ichneumonidae*.

Pimpla, *Fabr.*—bipartita, *Br.*: punctata, pedator, *Fabr.*

Ophion, *Fabr.*—univittatus, rufus (In.), *Br.*

Paniscus, *Grav.*—lineatus (Ben.), *Br.*

Cryptus, *Fabr.*—tricolor (Ben.), *Br.*

Joppa, *Fabr.*—rufa, *Brullé.*

Mesostenus, *Grav.*—marginatus (Ben.), geniculatus, ochropus,
Br.

Hemiteles, *Grav.*—tripartitus (Mad), *Br.*

Family *Braconidae*.

Bracon, *Fabr.*—aculeator, femorator, *Fabr.*: laminator, Richei,
didymus, *Br.*: hindostanus, *Brullei*, *Smith.*

Vipio, *Latr.*—scutus, bicarinatus, *Br.*

Agathis, *Latr.*—flavipennis, maculipennis (Ben.), semifusca,
suffasciata, *Br.*

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DIPTERA.

The order Diptera (two-winged) includes those insects commonly known as house-flies, crane-flies, gad-flies, bot-flies, gnats, and mosquitos. The insect passes through the three stages of larva, pupa and imago. The body is composed of three parts, the head, thorax and abdomen. The plane of the head opposite the thorax is called the occiput, and that portion of it lying over the junction of the head, the nape (*cervix*). The part of the head between the antennæ and the occiput is known as the front (*frons*) and the top of it the crown (*vertex*), the boundary between the front and the occiput being called the vertical margin. The middle of the front being often of a more membranaceous nature and sometimes differing in colour from its borders is called the frontal stripe. The frontal crescent is separated from the front by an arcuated impressed line called the frontal fissure. The anterior part of the head from the antennæ to the mouth is called the face (*facies*). The head is furnished with a mouth, eyes and antennæ. The oral parts destined for sucking consist of 2-6 hair-like pieces of a scaly texture, and are either enclosed in the upper groove of a sheath having the form of a proboscis and terminated by two lips or are covered by one or two unjointed scales that form the sheath. The oval parts in Diptera are analogous to and represent the jaws, lips and feelers of the mouths of other insects. The more noticeable of these parts are the labium or under lip and the palpi or feelers. The eyes are compound and are surrounded, as a rule, by a ring called the orbit. Where simple eyes

exist, they are never more than three in number and are placed on the vertex, sometimes in a sharply-defined triangular space called the ocellar triangle. The antennæ are placed on the front part of the head: the two lower joints are called the *scapus* and the remainder the *flagellum*. They vary much in form and size in different families. The thorax consists of three parts, though in appearance there is only one. The first and last segments are very short. The mesothorax bears the wings on its upper surface and these are two in number, membranous, veined and mostly transparent, though occasionally spotted. They lie, when at rest, longitudinally to the body and have a pair of alulets at their base. A pair of balancers (*halteres*) are attached to the last segment of the thorax and represent rudimentary hind-wings. The abdomen consists of 5-9 apparent segments and is frequently joined to the thorax by only a portion of its breadth. In the females the abdomen usually terminates in a point, but in those with fewer segments it terminates in a succession of small tubes which close up in the manner of a telescope. There are six legs terminating in 5-jointed tarsi, of which the last joint is furnished with two claws and two or three *pulvilli* or cushions that enable the insect to walk on polished surfaces. The greater number of the Diptera possess a bladder-like expansion (*ingluvies*) or crop communicating with the œsophagus by a tube. The larvæ are fat, white, legless grubs brought up in the food provided for them from the time of their exit from the egg. They do not change their skin until they undergo the change to the pupa state, and even then the outer covering seems only to harden and form a case for them: others prepare cocoons before the change. The wingless *Nycteribiida* and other apterous species belong to this order as well as the *Pulicida* or fleas, which though apterous are in form and habits allied.

The neurulation of the wings has been made use of in the classification of the Diptera in part by Fallen, but not to the extent that has been observed in the Hymenoptera. The families of the order are now distributed as follows:—

I.—ORTHOPTERA—pupa incomplete.

- 1.—*Nemocera*.—Diptera which have the antennæ filiform and composed of more than six joints: palpi 4-5 jointed. Includes all the families in the following list from the *Cecidomyiida* to the *Tephritida*.

B.—Brachycera.—Diptera which have the antennæ short and apparently only 3-jointed; the *scapus* normal and the first joint of the *flagellum* abnormally developed and converted into a sensorial organ: palpi 1-2 jointed. Includes all the families from the *Xylophagidæ* to the *Dolichopodidæ*.

II.—CYCLORAPHA—pupa coarctate.

A.—Proboscidea.—Diptera furnished with a proboscis and whose larvæ have an œsophageal frame. Includes all the families from the *Syrphidæ* to the *Diopsidæ*.

B.—Eproboscidea (Pupipara).—Proboscis wanting, body coriaceous and no œsophageal frame.

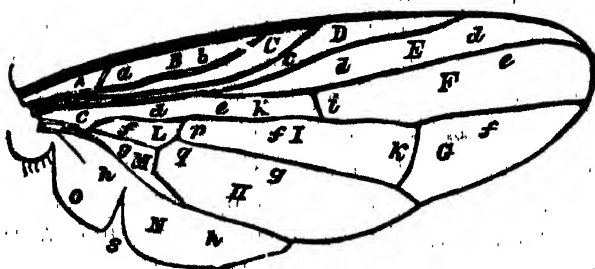
III.—SUCTORIA.

Includes the family *Pulicidæ*.

The neuration of the wings finds a common type in the wings of the *Muscidæ*. The frame-work is formed by the longitudinal veins springing from the base which are united together by the transverse veins, the intervening diaphanous space being called cells or cellules.

The following figure (A) explains the terminology of the neuration in Diptera:—

FIG. A.



Explanation—*a.* transverse shoulder-vein: *b.* axillary veins: *c.* to *f.* the first to sixth longitudinal veins: *g.* small or middle transverse vein: *h.* posterior transverse vein: *p.* anterior basal transverse vein: *q.* posterior basal transverse vein: *r.* rudiment of the fourth trunk: *s.* axillary incision: *A, B, C.* first to third costal cells; *D.* marginal cell: *E.* submarginal cell: *F, G, H.* first to third posterior cells: *L.* distal cell: *K.* first or large basal cell: *I.* second basal cell or anterior small basal cell: *M.* third basal cell or posterior small basal cell: *N.* anal or axillary corner of the wing: *O.* alar appendage (cuff).

Schiner informs us that in 1868 there were 20,800 species of Diptera described, and at present we may set down the known species as close on 30,000, of which a considerable number belong to India. Many of these insects, as remarked by Van der Hæven, are injurious to us by their puncture : others suck the blood of our domestic animals : some spoil our food by depositing their eggs on it, especially on flesh and cheese, where the larvæ (maggots) are developed. There is, on the other hand, no single species of this order from which we immediately derive advantage, yet much good is afforded by them indirectly. Some feed on and remove carrion and putrescent matters, others live in and on the bodies of the larvæ of more noxious insects. The Diptera live long in the larva state, and but few, except the domestic fly, have a prolonged existence in the perfect state. The mosquitos, gnats, sand-flies, black-flies, eye-flies, daddy long-legs, &c., so well known in India belong to the *Nemocera* group and abound in marshy districts, for their larvæ live in the stagnant water of ponds.

The *Cecidomyiidae* comprise the gall-gnats, minute delicate species remarkable for long hairs on the wings which are easily rubbed off. The *Mycetophilidae* are called fungus-gnats, their larvæ feeding in great numbers on the mushroom. The *Simulium destinatum* inflicts a short sharp bite and frequently attacks various animals. The larvæ of the *Bibionidae* are found in the dung of cattle, and the perfect insect differs in the sexes of the same species. The *Culicida* furnish the most formidable specimens of the gnat tribe, and the *Tipulidae* give us the Indian representatives of the daddy long-legs. To the *Brachycera* group belong the *Xylophagida* or wood-eaters, and also the *Stratiomyida*, a family rich in various forms and well represented in India. The larvæ of the insects of the latter family live in water, have a long flattened body covered by a coriaceous skin, divided into segments, of which the last three form a tail crowned by a radiated expansion of hairs. The skin dries up to form the pupa case, and the perfect insect emerges from an orifice made by it in the second ring. The *Tabanida* or gad-flies are very common in the forests along the foot of the hills and also the bot-flies. The former pursue animals to suck their blood, and the latter in order to lay their eggs on the hair in places which are commonly licked by the animals. The eggs then descend through the mouth into the stomach, where they hatch, and larvæ are produced, which,

after a certain time, pass out with the excrement to the ground, where the pupa stage is passed and a new generation of the bot-fly arises. The *māra* fly of Kumaon probably belongs to this section. This insect hovers in the air for some time before alighting and then settles and attaches itself to the skin. Its bite is at first painless, but after a time a troublesome itching is felt and a mark like a bruise arises which eventually forms a sore if not cared for. It is particularly the pest of the Sarju valley.

The *Asilida* are largely represented in genera and species in India. The three basal cells are much prolonged and the third longitudinal vein is furcate and the third joint of the antennæ is simple. The insects of the genus *Asilus* are carnivorous and prey on other Diptera and Hymenoptera. The *Bombylida* is another family exceedingly rich in Indian forms. To the *Proboscidea* belong the *Syrphida* or Aphis-caters, whose larvæ prey on plant-lice. The perfect insects are so spotted and banded with yellow as to resemble a young wasp and the larvæ are small slender worms of a pale green colour. The common house-fly and the flesh-fly and blue-bottle belong to the *Muscida*. Their legless larvæ are well known. The bot-flies are large velvety flies which have very small antennæ and a rudimentary trunk. They take no nourishment in the perfect state, and though they make a loud buzzing noise are merely occupied in selecting a suitable place on which to lay their eggs. To the *Euproboscidea* belong certain small, parasitic, usually apterous flies that prey on the bodies of mammals, birds and insects, and include the sheep-louse or tick so common wherever the Bhotiyas drive their flocks, and the bat-louse that especially abounds on the flying-fox. In the last section are placed the fleas which have a complete metamorphosis like the Diptera proper and are very common in the rains in every hill-station.

DIPTERA.

I.—ORTHOEAPHA.

A.—Nemiocera.

- Family *Cecidomyiida*—Gall-gnats,
Cecidomyia, Meigen.—*primaria* (Müd.), Walk.
- Family *Mycetophilida*—Fungus-gnats.
Mycetophila, Meigen.—*bimaculata*, Walk.

Family *Simuliidae*.

Simulium, Latr.—*destinatum* (Mad.), Walk.

Family *Bibionidae*.

Bibis, Geoff.—*bicolor*, Walk.

Plecia, Wied.—*fulvicollis* (N. I.), Wied.: *ignicolis* (Nep.), Walk.

Family *Culicidae*—Gnats.

Culex, Linn.—*fuscanus* (N. I.), Wied.: *pipiens* (In.), Linn.

Family *Chironomidae*.

Chironomus, Meigen.—*socius* (Ben.), Walk.

Macropheza, Meigen.—*gibbosa*, Wied.

Family *Tipulidae*—Daddy long-legs: crane-flies.

Caloptera, Oatr.—*nepalensis* (Nep.), West.

Tipula, Linn.—*præpotens* (Nep.), Wied.: *venusta* (As.), *fulvipennis* (Nep.), *reposita* (Nep.), Walk.

Pterocosmus, Walk.—*velutinus*, (Nep.), Walk.

Otenophora, Meigen.—*læta* (N. I., Sind.), Fabr.: *xanthomelana*, *melanura* (Nep.), Walk.

B.—Brachycera

Family *Xylophagidae*—Wood-gnats.

Xylophagus, Meigen.—*brunneus*, Wied.

Phycus, Walk.—*canescens*, Walk.

Family *Stratiomyidae*.

Baris, Walk.—*javana*, Macq.

Sargus, Fabr.—*gemmifer* (As.), *aurifer* (N. I.), Walk.: *metallinus* (Nep.), Fabr.

Chloromyia, Duncan.—*sapphirina*, Walk.: *flaviventris*, *affinis*, Wied.

Stratiomyia, Geoff.—*rubritarsis* (Ben.), *solenis*, Macq.: *viridana* (Ben.), Wied.: *minuta* (Mad.), *pusilla* (Mad.), Fabr.

Otitellaria, Meigen.—*hansoni*, Wied.

Blastos, Walk.—*indicus*, Saund.

Pachygaster, Meigen.—*rufitarsis*, Macq.

Family *Tabanidae*—Breeze-flies, gad-flies.

Pangonia, *Latr.*—*longirostris* (N. I.), *Hard.*: *amboinensis*, *Fabr.*

Chrysops, *Meigen.*—*dispar*, *pellucidus*, *Fabr.*: *flaviventris* (N. I.),

Macq.: *fasciatus*, *Wied.*: *stimulans*, *Saund.*:

ligatus, *semicirculus*, *terminalis*, *Walk.*

Hæmatopota, *Meigen.*—*roralis*, *Fabr.*: *cana*, *Walk.*

Gastroxides, *Saund.*—*ater*, *Saunders.*

Tabanus, *Linn.*—*indicus*, *striatus*, *rufiventris*, *Fabr.*: *basalis*,

consanguineus (Mad.), *Servillei*, *rubicundus*,

Macq.: *virgo*, *ardens*, *dorsilinea*, *orientalis*,

rubidus, *Wied.*: *inscitus*, *auriflamma*, *orien-*

tis, *tenebrosus* (Mad.), *internus*, *Walk.*

Family *Asilidae*.

Leptogaster, *Meigen.*—*marion*, (N. I.), *Walk.*

Dasygogon, *Fabr.*—*apicalis*, *albonotatus* (Ben), *nigricauda*,

dorsalis, *Wied.*: *scatophagoides*, *laphrides*,

pulverifer, *trimelas*, *imbutus*, *apiformis*, *Gar-*

amas, *Vica* (As.), *Rhÿpæ* (As.), *polygnotus*

(As.), *Balbillus* (Nep.), *Ambryon* (N. I.),

Aphricos (N. I.), *Damias* (N. I.), *Echelus*

(Nep.), *Imbrex* (Nep.), *Libo*, *Otaeilus*,

Sura, *Volcatus*, *Walk.*

Disococephala, *Macq.*—*Prytanis* (N. I.), *Walk.*

Atomosis, *Macq.*—*purpurata*, *West.*

Laphria, *Meigen.*—*hirtipes*, *Fabr.*: *senomera* (Ben.), *gigas*,

Macq.: *bengalensis*, *Wied.*: *Elva* (N. I.),

chrysolitus, *elegans*, *Walk.*

Nusa, *Walk.*—*formis*, *æqualis*, *Walk.*

Michotamia, *Macq.*—*analis*, *Walk.*

Cormansia, *Walk.*—*halictides*, (Ben.), *Walk.*

Laxenecera, *Macq.*—*flavibarbis* (Ben.), *albibarbis* (Ben.), *Macq.*

Trupanea, *Macq.*—*flavibarbis* (Mad.), *varipes* (Ben.), *rufibarbis*,

orientalis, *fusca* (Ben.), *heteroptera* (Mad.),

Duvnoellii (Ben.), *Marci*, *maculatus*, *Macq.*:

hoppe (Mad.), *Westermanni* (Ben.), *Wied.*:

Cubana, *signifera*, *testifera*, *contracta*, *Go-*

bares, *auriventris*, *Walk.*

Erax, *Macq.*—*rufiventris*, *Macq.*

Asilus, *Linn.*—*bifidus* (*Mad.*), *annulatus*, *Fabr.*: *lætus*, *Wied.*:
Philus (*As.*), *Iamenes*, *Curvatus*, *opulentus*,
penultimus, *congedus*, *paterculus*, *præfinitus*,
Walk.: *bengalensis*, *Duvaucelii* (*Ben.*), *nudi-*
pēs, *trifarius* (*Mad.*), *flavicornis* (*Ben.*), *Macq.*

Ommatius, *Ill.*—*leucopagon*, *compeditus*, *auratus* (*Panj.*), *Wied.*,
nanus, *Walk.*

Senoprosopus, *Macq.*—*Diardii* (*Ben.*), *Macq.*

Damalis, *Fabr.*—*planiceps*, *Fabr.*: *tibialis*, *Macq.*: *fusca*, *Walk.*

Family *Midasidæ*.

Midas, *Fabr.*—*ruficornis*, *Wied.*

Family *Bombylidæ*.

Bombylius, *Linn.*—*maculatus* (*Mad.*), *Fabr.*: *orientalis* (*N. I.*),
Macq.: *ardens*, *Walk.*

Anthrax, *Scop.*—*Lar* (*Ben.*), *Fabr.*: *distigma*, *Wied.*: *Alexon*,
dives (*As.*), *collaris* (*Mad.*), *basifascia* (*N. I.*),
Walk.

Family *Therevidæ*.

Thereva, *Latr.*—*cylindrica*, *Walker.*

Family *Cyrtidæ*.

Henops, *Ill.*—*costalis*, *Walker.*

Family *Empidæ*.

Hilara, *Meigen.*—*Bares*, *Walker.*

Family *Delichopodidæ*.

Psilopus, *Meigen.*—*Cupido*, *cælestis*, *Walker.*

II—CYCLORAPHA

A.—Proboscidea

Family *Syrphidæ*—*Aphis-eatera*.

Microdon, *Meigen.*—*stilboides*, *Walk.*

Chrysotoxum, *Ill.*—*Bephyrus* (*N. I.*), *Walk.*

Syrphus, *Fabr.*—*ericosterus* (*N. I.*), *Fabr.*: *segratus*, *orientalis*
 (*Mad.*), *Wied.*: *alternans* (*N. I.*), *Walk.*

Baccha, *Fabr.*—*Amphibia*, *Walk.*

Eristalis, Latr.—*crassus* (N. I., Nep.), *Fabr.*: *chrysopygus* (As.),
Wied.: *solitus* (Nep.), *amphicrates* (N. I.),
Andraemon (As.), *Æsymnus*, *Walk.*

Helophilus, *Meigen.*—*quadrivittatus*, *bengalensis*, *Wied.*

Xylota, *Meigen.*—*Æthusa*, *Walker.*

Ceria, *Fabr.*—*eumenioides* (N. I.), *Saund.*

Family *Tachinidæ.*

Tachina, *Meigen.*—*nigricornis*, *Wied.*: *tepens* (Mad.), *Sacontala*
 (Nep.), *Titan* (As.), *Psamathe* (Mad.), *Zabina*
 (N. I.), *fusiformis*, *Walk.*

Zona, *Walk.*—*pictipennis* (Nep.), *Walk.*

Family *Dexiada.*

Dexia, *Meigen.*—*serena* (Mad.), *Walk.*

Family *Sarcophagidæ.*

Sarcophaga, *Meigen.*—*ruficornis* (N. I.), *Wied.*

Family *Muscidæ.*

Idia, *Meigen.*—*xanthogaster* (N. I.), *Wied.*

Musca, *Linn.*—*pallens*, *Desv.*: *orientalis*, *flaviceps*, *Macq.*: *Phal-*
lia (N. I.): *Metilia* (Nep.), *Walk.*

Sphyracephala, *Soy.*—*Hearseiana* (Nimach), *West.*

Family *Anthomyidæ.*

Anthomyia, *Meigen.*—*Perce* (Mad.), *Walk.*

Family *Cordyluridæ.*

Scatophaga, *Meigen.*—*stercoraria*, *Latr.*

Family *Sciomyzidæ.*

Sepedon, *Latr.*—*Crishna* (Nep.), *Walk.*

Family *Micropezidæ.*

Nerius, *Wied.*—*rubescens* (Mad., Ben.), *Macq.*

Family *Ortalidæ.*

Oxycephala, *Macq.*—*pictipennis*, *Walk.*

Ortalis, *Fallen.*—*Isara* (N. I.), *Walk.*

Ulidia, *Meigen.*—*melanopsis* (N. I.), *Walk.*

Family *Trypetidæ.*

Trypeta, *Meigen.*—*Tucia*, *Stalla* (N. I.): *Mutya*, *Walk.*

Family *Diopsida*.

Diopsis, *Linn.*—*indica*, *Hearseiana* (N. I.), *West.* : *Sykesii* (Bom.), *Gray*.

B.—*Sproboscidea*, *Pupipara*,Family *Hippoboscidea*.

Hippobosca, *Linn.*—*variegata* (Ben., Mad.), *Wied.* : *Francilloni* (Ben.), *Leach*.

Ornithobia, *Meigen.*—*pallida* (N. I.), *Meigen*.

Ornithomyia, *Latr.*—*nigricans* (Ben.), *Leach*.

Family *Nycteribiidea*.

Nycteribia, *Latr.*—*Hopei* (Ben.) : *Roylei* (N. I.) : *Sykesii*, *West.*

III.—SUCTORIA.

Family *Pulicida*.

Pulex, *Linn.*—*irritans*, *Linn.*

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MYRIAPODA.

The class myriapoda is one belonging to the sub-kingdom Articulata and includes the animals known as Myriapoda. centipedes, millipedes and one kind of glow-worm. They do not undergo a metamorphosis properly so called, though in some the number of rings and feet augment as they grow. The buccal apparatus consist in most of two mandibles which are toothed at their broad extremity and of a four-lobed underlip whose two lateral lobes represent the maxillæ of insects. In some the second pair of feet are soldered together at the base and form a second underlip which serves as a protection to the oral organs and the first pair of feet, and in others these parts coalesce and form a suctorial apparatus. There is no separation between the thorax and abdomen and the whole body is ringed and has attached to its under

surface the legs, which number twenty-four or more and are terminated by a single claw. Most of them have two clusters of simple eyes, but in some the eyes are wanting. The antennæ are as a rule short and thread-like. They are distributed into the following sub-orders and families :—

I.—*Chilopoda* or foot-jawed.

- a.—*Cermatiida*.
- b.—*Scolopendrida*. Centipedes.
- c.—*Geophilida*. False glow-worm.

II.—*Chilognatha* or jaw-jawed.

- a.—*Glomerida*. Millipedes.
- b.—*Polydesmida*.
- c.—*Julida*. Snake millipedes.

The *Chilopoda* are carnivorous in their habits and live on insects that prey on vegetable matters. Their mandibles are half-leg and half-jaw, like the *falces* of the scorpion, and in the centipedes are provided with a poison sac and gland with which their prey is benumbed. The *Cermatiida* are easily recognised by their thin body, long legs, long antennæ and correspondingly long ultimate pair of legs. The *Geophilida* are small, long and narrow with numerous short legs, often forty or more. Several species of this family emit a phosphorescent light at the breeding season. The *Chilognatha*, on the other hand, have an oral apparatus fit for manducation and are vegetable feeders, doing considerable damage to garden and other crops; they also consume dead earth-worms and small molluscs. Many have the power of emitting a very unpleasant unctuous fluid with an acid reaction. They have also the habit of rolling themselves up spirally with their head in the middle, and in this position hibernate. A common rufous form may be found on the roads after the rains have commenced crawling over each other in hundreds.

Class MYRIOPODA—Centipedes.

I.—CHILOPODA.

Family *Cermatiida*

Cermatia, *fa.*—*nobilis*, *Teropl.*: Hardwicki, Downesii (Gen. In.),
rubiclunata, *Neop.*: *longicornis* (Mad.),
Fabr.: *serripes* (Mad.), *Gerr.*

Family *Scolopendridæ*.

Scolopendra, *Gerw.*—*tigrina* (Oudh), *formosa* (Ben.), *silhetensis*, *Hardwickei*, *concolor* (Ben.), *tuberculidens*, *Newp.*: de *Huanii*, *Brandt.*

Cryptops, *Leach.*—*nigra* (N. I.), *Newp.*

Family *Geophilidæ*.

Mecistocephalus, *Newp.*—*punctifrons* (Mad.), *Newp.*

II.—CHILOGNATHA.

Family *Glomeridæ*.

Zephronia, *Gray.*—*heterostictica* (Mad.), *glabrata*, *Newp.*: *chitonoides* (Mad.), *tigrina*, *zebraica* (Bom.), *nigrinota* (As.), *lutescens*, *lævissima* (Sik.), *excavata*, (Sik.), *atrisparsa* (Bom.) *Butler*: *inermis* (Mad.), *Humb.*

Sphærotherium, *Brandt.*—*politum* (Sik.), *maculatum* (Sik.), *Butler*: *javanicum*, *Guér.*

Family *Polydesmidæ*.

Polydesmus, *Latr.*—*depressus*; *stigma* (Mad.), *Fabr.*

Family *Julidæ*.

Julus, *Linn.*—*fuscus*, *crassus*, *indicus*, *Linn.*: *carnifex* (Mad.), *Fabr.*: *malabaricus*, *spinicaudus* (Mal.), *Dus.*: *nitens*, *Mur.*

Spirobolus, *Brandt.*—*punctulatus* (Cal.), *Newp.*

Spirostreptus, *Brandt.*—*nigrolabiatus* (Mad.), *maculatus* (Cal.), *cinctatus* (Mad.), *Newp.*

Lysipetalum, *Brandt.*—*Hardwickei* (Nep.), *Gray.*

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CHAPTER III.

HISTORY.¹

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Law of distribution. Khassas. Bhotiyas: Immigrants. Sources of information. Vaidik geography. Vaidik ethnography. Aryas and Dasys. Itihāsa period. Nāgas on the Jumna. Pāndavas retire to the Himālaya. Manu. Allusions to Badari in the sacred texts. Paurānik period. Discovery of Kaliā. The Purānas. The fashioning of the earth. Meru. Boundaries of Meru. Local geography in the Brahmānda and Vāyu Purānas. The Mānasa-khanda of the Skanda Purāna. The Kadāra-khanda.

In a previous chapter² we have given a general sketch of the principal races of men inhabiting the Himālaya-Tibetan region. We have shown how their distribution, their character and their habits have all been affected by the physical circumstances of the country in which they live; how physical unfitness has retarded the diffusion of particular races, and how physical adaptation has encouraged it. The operation of these general laws is well exhibited in Kumaon and Garhwāl. Here the entire tract between the snowy range and the plains of Hindustān is in its main physical characteristics Indian. The country which lies between the snowy range and the ghāt-range or water-parting is on the other hand entirely Tibetan in its character. These statements are more especially true of the inhabited portions of the two regions. The mass of the population of the first-named tract is found in the valleys and the lower slopes of the mountains below an elevation of 6,000 feet. Here the climate is thoroughly Indian; a well-marked winter, almost entirely without snow, is followed by a summer of nearly tropical heat that is further succeeded by a season of periodical rain. The vegetation is semi-tropical in its character and the common agricultural productions are those of the plains of northern India. In the valleys beyond the snowy range, the Bhot of the inhabitants of the lower hills, we find

¹ In this chapter it is intended to give only the general ethnography, reserving names and caste details and folk-lore for the notices of each district given hereafter. So far as possible matters affecting the Kumaon Himālaya will alone be noticed, but much concerning other portions of the great range must be incidentally mentioned, for which the better explanation may be obtained by following up the references given in the foot-notes. ² Chapter I, Vol. I.

ourselves under altogether different conditions. The heavy falls of snow in the winter months give to the climate at that season an even more than Tibetan rigour. The summer is always temperate and the periodical rains fall only as moderate showers. The vegetation is scanty and sub-arctic in its character and the late spring and early autumn restrict agricultural operations to one precarious summer crop of a few of the hardier products of northern countries. Precisely then as the climatal conditions of the Himálaya approach those of India on the one hand or of Tibet on the other, so do we find that the Hindu or the Tibetan element prevails among its inhabitants.

In considering the origin and position of the races inhabiting the Himálaya between the Tons and the Khasas, Bhotas, Im- migrants. Sánda, it will be necessary to discuss the ancient geography, history and ethnography of the tract, for the materials for these really separate studies are one and the same and it would lead to much useless repetition to separate them so as to make each intelligible by itself. We shall therefore in the following pages combine all that we have been able to gather regarding the early history, geography and ethnography of the Kumaon Himálaya, and although it may take us into what at first sight may appear to be matters unconnected with our subject, a little reflection will show that where the materials for positive deductions are wanting, we can only arrive at some certainty by establishing negative propositions. The Himálaya of these provinces is not an isolated tract separated from the rest of the Himálaya to the west or from India on the south by such physical or ethnographical boundaries as would give it a peculiar character and would lead to a well-marked local history. On the contrary though, as we shall see, it has a local mediæval and modern history, its earlier history must be looked for in the notices that we possess regarding the western Himálaya as a whole, and it is only after a careful and comprehensive view of those notices that we can arrive even at the negative conclusions which are all that we can expect to establish in the present state of our knowledge. It is still, however, of some advantage to show that many of the existing theories regarding the origin of the people of these hills are devoid of foundations in fact and are otherwise impossible. We shall endeavour, therefore, to trace out every reference to this section of

the Himálaya and thus afford indications which in the absence of more precise information will enable us to form some conception of its position in history. We hope that it is hardly necessary formally to deprecate the criticism of those who have the inestimable advantage of access to great libraries and the society of the learned. The following pages simply profess to be suggestive notes on a comparatively virgin field in Indian archæology and are the fruit of the leisure minutes, we may say, of an unusually laborious Indian official life. We shall leave to those most competent to decide the ultimate value of the results of our researches into Kumaon history ; but, in any case, we believe that we have added something of permanent value to existing knowledge and leave to others the task of completing the work. The Hindu writers, though professing to give in many cases the geography and history of the countries known to them, have with an universal persistence disfigured their accounts with the most puerile and groundless stories and have so mingled truth and fiction that it is difficult in any case and impossible in most cases to distinguish facts from fables. With the exception of the Kashmír chronicles we are not aware of any writing that deserves to be called an historical composition, but none the less is it necessary to consult these records and endeavour to collect from them the historical indications that they still assuredly possess.

The great mass of the population in Kumaon and Garhwál profess a belief little differing from the orthodox Hinduism of the plains. The existing inhabitants belong to the Khasa or Khasiya race and speak a dialect of Hindi akin to the language of the Hindus of Rájputána. All their feelings and prejudices are so strongly imbued with the peculiar spirit of Hinduism that although their social habits and religious belief are often repugnant to those who strictly observe the orthodox ceremonial usages of Hinduism, it is impossible for any one that knows them to consider the Khasas to be other than Hindus. There are several facts connected with their history that show, whatever their origin may have been, the Khasas have for centuries been under the influence of the Brahmanical priesthood. The shrines of Kedár and Badari are both within Garhwál and from time immemorial have been visited by crowds of pilgrims from all parts of India, whose enthusiasm for Hinduism must

with them as guides and purveyors. Again, many of these pilgrims took up their residence in the hills and leavened the manners and observances of the rough indigenous population. Many other immigrants arrived to take service amongst the petty princes of the hills or to receive their daughters in marriage, and thus we find a considerable sprinkling of families all through these hills who consider themselves one with the various castes in the plains whose tribal name they bear. To the north in the inter-alpine valleys of Bhot, we have a tribe of decided Tibetan origin and whose affinities are found in the trans-Himálayan tribes of Hundes. They are known as Bhotiyas by the people of the lower hills, who in turn are designated Khasiyas by the Bhotiyas, whilst the people of the adjoining portion of Tibet are known as Hunas or Huniyas. In addition to the tribes already enumerated there are the Rájis or Rájyas, the modern representatives of the Rájya-Kirátas and the Thárús and Bluksas of the Tarái lowlands and traces of the Nágas and Sakas, whilst others contend that we have here also old Baktrian (Yavana) colonics. For our present purpose it is only necessary to observe that there are, at the present day, three great divisions of the population, the immigrants from the plains, the Khasas and Bhotas. With regard to the first division we shall reserve the detailed examination of their individual claims to the local accounts of each district which will follow hereafter. Here we shall endeavour to ascertain who these Khasas, Bhotas, Hunas, Sakas, Yavanas, Nágas, and Rájya-Kirátas were and what was their position with regard to the neighbouring tribes, a study that will necessarily lead us to consider the general history of ancient India wherever these names occur and much that might appear foreign to our purpose, but which bears materially on the conclusions to which we shall eventually arrive.

It is not often that the Hindu writers tell us much that we can depend upon regarding the peoples of ancient India, yet it may be gathered from them that at a very early period, the compilers of the sacred books possessed a considerable knowledge of the geography of these mountains. This knowledge, though Early knowledge. veiled in the later works by a cloud of silly legends, is none the less real and, when stripped of the marvellous, can be verified, at the present day. In Vaidik times, when the

elements were worshipped, when the primal manifestations of nature absorbed the devotion of the Aryan immigrants, the noble range of the Himálaya fitly called 'the abode of snow,' was looked on as the home of the storm-god, the mother of rivers, the haunt of fierce wild beasts and more fierce wild men. It then received the homage justly due to it as the greatest and most formidable of all the mountain systems that the Aryans had met with and was finally declared to be the home of the gods. From the earliest ages, the great, the good, and the learned have sought its peaceful valleys to enjoy nearer communion with the deity. In the manuals of the later Pauránik records we find almost every hill and river reverently and lovingly described and dedicated to some one or other of the members of the great pantheon. Legends of the gods and saints and holy men adorn the story of each peak and pool and waterfall and give that realistic turn to the teaching of the earlier priesthood which appears to have been peculiarly adapted to the Hindu mind. "He who thinks¹ of Himáchal, though he should not behold him, is greater than he who performs all worship in Káshi. In a hundred ages of the gods I could not tell thee of the glories of Himáchal. As the dew is dried up by the morning sun, so are the sins of mankind by the sight of Himáchal."

The sources of our information may be thus briefly indicated:—

Sources of information. First the Vaidik records. Max Müller assigns a date between 1200 and 1000 B.C. to the older hymns of the Rig-Veda;² Haug places their composition between 2400 and 2000 B.C.; and Duncker states that the immigration of the Aryas took place about 2000 B.C., and the origin of the oldest songs of the Veda cannot, therefore, be considered earlier than the sixteenth century before Christ. For the songs of the Mantra period containing the later hymns Max Müller gives 1000 and 800 B.C. as the date of their composition, whilst Haug and others place them between 2000 and 1400 B.C. The works of Müller's Bráhmans period include the Bráhmanas, Upanishads, Aranyakas, and similar writings chiefly expository of those of the preceding period which are included in the *Sankhitas* or collections of the four Vedas. To the Sátra-period are assigned the six *Vedāngas*

¹ From the *Mánuca-áhandas* of the Skanda Purána in Sir John Strachey's notes, to which also I am indebted for a paraphrase of a portion. ² See Hist. Anc. Sans. Lit.: Duncker, Hist. Ant. IV, 30.

or branches of Vaidik exegesis and the Sūtras or redactions of the ancient *Sikhs* containing aphorisms relating to sacrificial and domestic duties and the like. These last belong to the Smṛiti or traditional class. The epic poems or Itihāsas form the second division and are represented by the Mahābhārata¹ and the Rāmāyana. To the third division and latest in point of time belong the Purānas and their continuations to the present day, including the local collections of legends regarding the lives of the saints, the holy places and the miracles performed there. From the earlier Vaidik records we learn that the Aryas came from Central Asia and established themselves on either bank of the Indus. The greater number of the hymns of the Rig-Veda refer to this period of the Aryan history and distinguish between the immigrants and the aborigines. To the latter they give the generic name of Dasyu, which subsequently included the non-Aryan tribes as well as those of Aryan descent who separated from Aryan practices in matters of religion and polity. The later Vaidik records indicate the gradual advance of the Aryas to the south-east until we find them in the Itihāsa or epic period occupying the whole of the upper Duāb.

The geographical indications in the Rig-Veda are of the most meagre description and consist of the enumeration of certain rivers in the celebrated 'hymn to the rivers' and the names of a few tribes and countries.² The rivers named show that the Aryas were then living in the tract between the Indus and the Satlaj and were not well acquainted with the region between the latter river and the Ganges. The rivers Ganges and Drishadvati or Kaggar are named but once, the Sarasvati and Jumna are only mentioned a few times, but the Sindhu or Indus is frequently referred to, and to it as 'the most copious of streams' the river-hymn is addressed. In one verse, the other rivers are asked to receive this hymn :—"Receive my hymn, O Ganga, Yamuna, Sarasvati, Sutudri, along with the Parushni : listen,

¹ As to the date of this work, see Gazetteer, II., 60, note. That the principal part of the Mahābhārata belongs to a period previous to the political ascendancy of Buddhism had been proved by Professor Lassen; Müller's History above quoted, p. 62. The archaic portions of the Mahābhārata may be earlier than some of the works of the Smṛiti class and the older portions of the Vishnu Purāna may be earlier than portions of the Rāmāyana, but still the general statement given above is correct.

² Étude sur la géographie et les populations primitives du nord-ouest de l'Inde d'après les Hymnes Védiques, by M. V. de Saint-Martin. Paris, 1860. Muir's Sansk. Texts, II., 341, 652.

O Marudvriha along with the Asikni and Vitasta ; O Arjikiyá along with the Sushoma." In the succeeding verse the Rasa, Sveti, Kubhá, Gomati, and Krumu are mentioned as tributaries of the Indus. The Sutudri is the Satlaj : the Parushni is the Irávati or Ravi : the Marudvriha is the Chináb after its confluence with the Jhelam : the Asikni is the Acesines or Chináb, and the Vitasta is the Hydaspes or Jhelam. The names Arjikiyá and Sushoma signify, according to Lassen, vessels used in the preparation of the Soma juice and are not the names of rivers. The Kubha is the Kophenes or Kábul river, the Krumu and Gomati being the Kurum and Gomal rivers. The Sveti is the Swát river and the Rasa appears to be some other affluent of the Kábul river. The earliest seat of the Aryas in India is therefore the lower Kábul valley and the adjoining tract along the Indus, a place of which we shall have much to say hereafter. The knowledge of the Himálaya is confined to certain allusions to winter : thus in the Rig-Veda we have¹ the prayer :—" May we rejoice living a hundred winters (*satahimáh*) with vigorous offspring." In the Atharva-Veda the following passages occur :—" He whose greatness these snowy mountains (*himavanto*) and the sea with the aerial river declare." " May thy mountains be snowy (*himavanto*), O earth, and thy wilderness beautiful." Again in the same work the medicinal plant *kushtha* is said to be produced to the north of the Himavat and to be carried thence to the east. In the Aitareya-Bráhmána the Uttara Kurus are referred to thus :—" Wherefore in this northern region all the people who dwell beyond the Himavat (called) the Uttara Kurus and the Uttara Madras are consecrated to glorious rule." In a passage of the Kaushítaki-Bráhmána² it is written :—" Pathyá Svásti (a goddess) knew the northern region. Now Pathyá Svásti is Vách (the goddess of speech). Hence in the northern region speech is better known and better spoken and it is to the north that men go to learn speech : men listen to the instructions of any one who comes from that quarter, saying, ' he says (so and so), ' for that is renowned as the region of speech." On this the commentator remarks :—" Language is better understood and spoken : for Sarasvati is spoken of (as having her abode) in Kashmir, and in the hermitage of Badariká (Badrináth in Garhwál) the sound

¹ *Ibid.*, p. 323.² Written by Sankhayana for members of the Kaushítaki Sikha : see Müller, *Ans. Sansk. Lit.*, 180, 246 : Weber, *Hist. Ind. Lit.*, p. 50.

of the Vedas is heard." So also Lassen :—" An account is to be found in an ancient record, according to which the Sanskrit had been preserved in greater purity in the northern countries than elsewhere, and Kashmír and Badari, at the sources of the Ganges, are specified by the commentator as such regions. This is, however, not sufficient to prove that in the different provinces of India there were then fundamental differences in the sacred language." The medical treatise of Charaka makes the physician Bharadvája a disciple of Indra and assigns to the neighbourhood of the Himálaya that gathering of sages out of which came the instruction of Bharadvája by Indra. The treatise referred to has, according to Weber,¹ "rather high pretensions to antiquity ; its prose here and there reminds us of the style of the Srauta-sutras." From the later Vaidik records, therefore, we learn that as early as several centuries before the Christian era the shrine of Badari was celebrated as a seat of learning and as the abode of holy men.

We next turn to the names of the peoples known to the Vaidik writers. In a verse of the Rig-Veda Visvá-mitra asks :—" What are thy cows doing amongst the Kíkatas ? They yield no milk for oblations and they heat no fire," implying that they were a people who knew not Aryan rites. Again in the Atharva-Veda, in an invocation to Takman, the personification of itch, as Chachak Devi is now of small-pox, it is said that his abode was among the Mújavats and Mahávrishas. As soon as born he sojourned amongst the Báhlikas, and he is here desired to depart to the Gándhárís, Mújavats, Angas, and Mágadhas. The Kíkatas are elsewhere explained to be one with the Mágadhas or people of Behar. The Bahlikas are the people of Balkh ; Gandhára is the tract around Peshawar, and the Mújavats are elsewhere explained² to be a mountain tribe of the north-west frontier. In the Bráhmanas, the name ' Báhlika ' is applied to the tribes of the Panjáb generally, and it would appear that they as well as the Kámbojas, a frontier tribe to the north-west, spoke a dialect of Sanskrit, for Pániñi, in his grammar, explains the dialectic differences between the speech of the Aryas and that of the Báhikas and Yaska those between the Aryan speech and the language of the Kámbojas. There is also evidence³ to show that the people of Gandhára were in

¹ *Ibid*, p. 268.² In the Mahábhárata.³ Muir, II., 353.

the habit of holding intercourse and contracting alliances with the Aryas. From these indications Muir argues that :—“ Although in individual passages of the Mahábhárata hatred and contempt are expressed in reference to the tribes living along the Indus and its five great tributaries, yet there is no trace of these tribes being regarded as of non-Indian origin.” * * * “ The Indians distinguish not expressly, but by implication, the nations dwelling between the Indus and the Hindu Kush into two classes : first those to the eastward of the Indus, and some of those immediately to the westward of that river, as the Gandhâras, are in their estimation Indians; but with the exception of the Kashmîras and some less known races these Indians are not of the genuine sort : the general freedom of their customs is regarded as a lawless condition.” And Weber¹ similarly remarks :—“ The north-western tribes retained their ancient customs which the other tribes who migrated to the east had at one time shared. The former kept themselves free from the influence of hierarchy and of caste which arose amongst the latter as a consequence of their residence amongst people of alien origin (the aborigines). But the later orthodox feelings of the more eastern Aryas obliterated the recollection of their own earlier freedom and caused them to detest the kindred tribes to the westward as renegades, instead of looking on themselves as men who had abandoned their own original institutions.” Thus we have three classes of inhabitants in Upper India, that branch of the Aryas to whom the composition of the Vedas is to be attributed ; their brethren in race and language who did not follow them in the development of their religious system and the aboriginal tribes.²

The question remains as to who were Aryas and who were Dasyus. The primitive meaning of the word Aryas and Dasyus.

‘ Arya ’ is still a subject of discussion. Some trace it throughout the Indo-European region in the ‘ Airya ’ of the ancient books of Persia ; in the name ‘ Ariana ’ applied to the

¹ Quoted from *ibid.*, 354.

² It may be well to notice here in what respect the tribes not belonging to the four classes, such as the Bâhikas and Khasas, offended the prejudices of the twice-born. One of the charges brought against them is the boldness and unchastity of their women, “ who sang and danced in public, drunk and undressed, wearing garlands and perfumed with unguents.” Another charge is that they had no Veda, no Vaidik ceremony and no sacrifice. Again, a Brahman then becomes a Kshatriya, a Vaisya or a Sudra, and eventually a barber. The aboriginal tribes would also seem to have been in the habit of burying their dead. Muir, II., 412, 432.

³ Van den Ghuyt, *Le nom primitif des Aryas*. *Revue Historique*, 1860.

tract comprising Herát, Afghánistán, Khorásán, and Bīluchistán ; in the name 'Aryaka' (Irák) ; in the word 'Ariya' in the inscriptions of the Achæmenides; in the name 'Iran' in those of the Sassanides ; in the 'Arioi' (Ossetes) of the Caucasus; in 'Argeia,' an old name of Greece ; in the name 'Hermann' (Arminius) in Germany ; and even in 'Erin,' the old name of Ireland. The meaning attached to the word in the earlier hymns of the Rig-Veda appears, however, to be 'light-coloured,' 'pale,' 'white,' as compared with the Dasyus or black Antiochones. Gradually as the Aryan forces advanced the word carries with it the meaning of free, noble, brave, masterful, wise, as opposed to the enslaved, debased, and ignorant Dasyus, and here we find the white-faced immigrants¹ called collectively the Aryan '*varna*,' or 'colour,' a word which is to-day translated by caste (*baran*). The Greeks also knew of this contrast between the dark and light coloured races of India, for Ktesias records² that the Indians were white and black, and that he himself had seen several of the fairer race. The Dasyus are described as a black-skinned race who despised the rites and ceremonies of the Aryas, and again as goblins and demons inhabiting the forests and mountains of the frontier countries. In the Rig-Veda it is recorded³ that Indra, "armed with the lightning and trusting in his strength, moved about shattering the cities of the Dasyus," and the gods are prayed to "distinguish between the Aryas and those who are Dasyus :—" "By these (succours) subdued to the Aryas all the hostile Dása people everywhere, O Indra, whether it be kinsmen or strangers who have approached and injuriously assailed us, do thou enfeeble and destroy their power and vigour and put them to flight."—"Who delivered (us) from the destroyer, from calamity ; who, O powerful (god), didst avert the bolt of the Dása from the Arya in (the land of) the seven streams."—"He who swept away the low Dása colour" (*varnam*)—"scattered the servile hosts of black descent"—"conquered the black-skin." Again Manu writes that those tribes which are without the pale of the castes, whether they speak the language of the Mlechchhas or of the Aryas, are called Dasyus,⁴ and there is not

¹ Meir, Sans. Texts, II. 360 : 'Astvi dasyas pro aryam varnam dast,' slaying the Dasyus he protected the Aryan colour.

² M'Crindle's Ktesias, p. 13.

³ Meir, l. c., 362.

⁴ The Dasyus had chiefs over each tribe, several of whom are named. They lived ignotly, were intelligent and knew the law, but did not adopt the Brahmanic ritual, especially the complicated system of sacrifice requiring the aid and presence of several priests. See Meir, II., passim.

wanting evidence to show that some of the opponents of the orthodox immigrants to whom we owe the Vedas were of their own colour or caste. In the hymns of the Rig-Veda we have addresses to Indra implying the existence of Aryan foes as well as Dasyus:—“Do thou, heroic Indra, destroy both these our foes (our) Dása and our Arya enemies”—“May we, associated with thee, the mighty one, overcome both Dása and Arya through thy effectual energy”—“Whatever ungodly person, Dása or Arya, designs to fight against us, let these enemies be easily subdued by us.” The Aryan tribes, we further learn, were divided into clans, each under its own Raja, and the newcomers pressed on the old settlers and fought with them. A formidable coalition of the Bharatas and others whose family priest was Visvámitra attacked the Tritsus on the Sarasvati, whose spiritual guides belonged to the family of Vasishtha, and we have the prayers of both priests invoking the aid of Indra in the coming battle. The Bharatas were defeated and the song of victory of Vasishtha shows us that the enemies against which his side fought were Aryas. In the Aitariya-Bráhmāna, the author, after quoting a saying of Visvámitra, adds—“Most of the Dasyus are descended from Visvámitra.” Thus we see how certain Aryas who did not follow the orthodox guides became classed with the aborigines, and thus arises one source of the great confusion observed in the later ethnology. The system existing on earth was also transferred to the sphere of the gods, and here we find the Dasyu race represented by the Rákshasas, Dánavas and Daityas, sometimes the rebellious subjects and sometimes the slaves¹ of the deities. It is in the later records that most details are given, but before proceeding further we will note the route by which the Aryas passed into Upper India. So late as 1840, Professor Benfey argued that most probably the Aryas dwelt for some time in little Tibet, near the sources of the Indus, before passing into India, and that the route adopted by them was through the passes along the Kumaon and Garhwál frontier to Indraprastha. In this view he was supported by Professor Weber as the only one consistent with the materials at their disposal. On reading through the Rig-Veda, however, both these eminent scholars abandoned this position and agreed in the result now generally accepted, that the Aryan tribes moved from Baktria into India by

¹ Dasyu is connected with *dásu* in the sense of ‘slave’; Muir, II, 267.

the Hindu Kush through the Kábul valley and across the Indus¹ to the Sarasvati, the route that has been taken in every successive great invasion of India.

From the Sarasvati, the Aryas pressed on and occupied the upper Duáb, and it is here we find them in the Itihása period, when the Mahábhárata was written. The Uttara Kurus are now mentioned as living in Hari Varsha, as a people whom no one attempts to conquer and their country as the home of primitive customs. In describing the condition of the southern Kurus it is said that "they vied in happiness with the northern Kurus." In the Rámáyana, it is recorded that the Uttara Kurus are liberal, prosperous, perpetually happy and undecaying. In their country there is neither cold nor heat, nor decrepitude, nor disease, nor grief, nor fear, nor rain, nor sun, a description which has been localised in Kumaon, but here agrees better with the tract to the north of the Kashmir valley. Lassen remarks that though the country of Harivarsha belongs to the region of mythical geography, the existence of the Uttara Kurus has a basis of geographical fact from (1) the way the country is mentioned

¹ *Ibid.*, 309, 337. Lassen writes:—"The diffusion of the Aryas towards the south, points to the conclusion that they came from the north-west from the country north of the Vindhya, probably from the region bordering on the Jumna and the eastern part of the Panjáb. Their extension to the east between the Himálaya and the Vindhya also indicates the same countries as their earlier seats. We find, moreover, evident traces of the Aryas in their advance from the north-west, having severed asunder the earlier population of Hindustan and driven one portion of it towards the northern and another portion towards the southern hills. Further, we cannot assume that the Aryas themselves were the earlier inhabitants who were pushed aside; for the inhabitants of the Dakhin, like those of the Vindhyan range, appear always as the weaker or retiring party, who were driven back by the Aryas. We cannot ascribe to the non-Aryan tribes the power of having forced themselves forward through the midst of an earlier Aryan population to the seats which they eventually occupied in the centre of the country; but, on the contrary, everything speaks in favour of their having been originally settled in those tracts where we find them at a later period and of their having once occupied an extensive territory." Again, he writes:—"There is only one route by which we can imagine the Aryan Indians to have immigrated into India; they must have come through the Panjáb and they must have reached the Panjáb through western Kábulistán. The road leading from the country on the Oxus into eastern Kábulistán and the valley of the Pamjura or into the upper valley of the Indus, or from Gilgit over the lofty plateau of Deotson down on Kashmir, roads now known to us as the roughest and most difficult that exist and do not appear to have been ever much or frequently used as lines of communication. We can only imagine the small tribes of the Dáradas to have come by the second route from the northern side of the Hindu Kush into their elevated valleys, but we cannot suppose the mass of the Aryas to have reached India by this road. All the important expeditions of nations or armies which are known to us have proceeded through the western passes of the Hindu Kush, and if we suppose the Aryan Indians to have come into India from Baktria, this is the only route by which we can assume them to have arrived."

in the Vedas ; (2) its existence in historical times¹ as a real country, and (3) its being referred to as the home of primitive customs.

As regards the frontier tribes, the Mahábhárata mentions the conquest by the Pándavas of "the Utsavasankatas, seven tribes of Dasyus, inhabiting the mountains." Again, "Pákasásani conquered the Daradas with the Kámbojas and the Dasyus who dwell in the north-east region, as well as the inhabitants of the forest, with the Lohas, the farthest Kúmbojas and the northern Rishikas." Moreover, Saineya, the charioteer of Krishna, is said to have "made the beautiful earth a mass of mud with the flesh and blood of thousands of Kámbojas, Sakas, Savaras, Kirátas, Varvaras, destroying thy host. The earth was covered with the helmets and shaven and bearded heads of the Dasyus," clearly intimating that the word 'Dasyu' is here a generic term denoting the whole of the tribes who are previously mentioned in this passage. The same record affirms their connection with the Aryas in the verses :—"These tribes of Kshatriyas, viz., Sakas, Yavanas, Kámbojas, Dráviras, &c., have become Vrishallas from seeing no Brahmans." This statement is repeated subsequently with the addition of the Mekalas, Lítas, Konvasiras, Saundikas, Darvas, Chauras, Savaras, Barbaras and Kirátas. Again the Yavanas are said to be descendants of Turvasu, the Vaibhojas to be sprung from Druhyu, and the Mlechchha tribes from Anu. The Mahábhárata thus not only uses the word 'Dasyu' as a generic term for the border tribes, but also makes these tribes to belong to the Kshatriya or warrior race. How it came to pass that these Kshatriyas lost their Aryan status is thus related :—"Satyavrata was degraded to the condition of a Chandála or outcast and called Trisanku on account of three sins (*tri-sanku*) of (1) killing a cow, (2) displeasing his father, and (3) eating flesh not properly consecrated. But on his repentance and feeding the family of Visvámitra during a twelve years' drought, he was transported to heaven. His descendant Báhu was vanquished by the tribes of Haihayas and

¹ Ptolemy describes Serika or China as surrounded by mountain ranges, the Annibian, Auxacian, Asmirian, Kasian, Thagurian, Emodus and another called Otorokorra, and places the Otorokorra southernmost of all near the Emodian and Serikan mountains. It was doubtless from the ancient legend quoted in the text that the Greeks derived their idea of the Hyperboreans, the people who lived a thousand years, a long and happy life, free from disease and care in a land all paradise: see McCrindle's *Ancient India*, 24, 77.

Tálajhangas¹ and died in exile. To him a posthumous son named Sagara was born, who nearly exterminated the Haihayas and would have also destroyed the Sakas, Yavanas, Kámbojas, Páradas and Pahlavas, had they not applied to their family-priest, Vasishtha, for protection. The priest desired Sagara to refrain from the slaughter of those who were as good as dead, for he had compelled the tribes to abandon the duties of their caste and all association with the twice-born, and Sagara thereon imposed on them peculiar distinguishing marks. He made the Yavanas shave their heads entirely, the Sakas to shave the upper half of their heads, the Páradas to wear their hair long, and the Pahlavas to let their beards grow. He deprived them of all religious rites and thus abandoned by Brahmans, they became Mlechchhas."² This instructive legend shows us that the writers of the Itihása and early Pauránik periods believed that these tribes had a common origin with themselves, though, as Muir³ shows, "they, at the same time, erroneously imagined that these tribes had fallen away from Brahmanical institutions : thus assigning to their own polity an antiquity to which it could in reality lay no claim." In another passage of the Mahábhárata we have the statement that "in the region where these five rivers (Panchnad, Panjáb) flow after issuing from the mountains dwell the Báhikas called Arattas. * * The name of the country is Aratta ; the water of it is called Báhika, there dwell degraded Brahmans, contemporary with Prajápati. They have no Veda, no Vedic ceremony, nor any sacrifice. The gods do not eat the food offered by servile (*dásamtyándm*) Vrat-yás. The Prasthalas, Madras, Gandháras, Arattas, Khasas, Vasátis and Sindhusauvras are nearly all very contemptible." Here we have the Khasas associated with the tribes of the Panjáb, which would show a more westerly location than Kumaon.

The same record shows us that around Hastinápur,⁴ the seat of the Pandu rāj, were Dasyus variously known as Asuras, Daityas, Bhillas, Rákshasas and

Nágas on the Jumna.

¹ Assisted by the Sakas, Yavanas, Kámbojas, Páradas and Pahlavas, according to the Váyu Purána; Wilson, VIII., 290. ² Wilson, VIII., 294, who notes that the Greeks commonly shaved a portion of the head; but it is doubtful whether they ever shaved the head completely. The Skythians shave the fore part of the head, gathering the hair at the back into a long tail, as do the Chinese. The mountaineers of the Himálaya shave the crown of the head, as do the people of Káshmir, with the exception of a single tuft. It is doubtful who the Páradas are, except the ancestors of the Brahmans may be assigned to them, and then the Pahlavas will be the Fortthians. # I., 400. § In the Meerut district.

Nágas. The great Khándava forest in the valley of the Jumna near Indraprastha or old Dehli was occupied by the Nágas under their king Takshaka, who were expelled by fire and driven to take refuge in the hills. The Aryas continued their progress and preceded by Agni, the god of fire, occupied the whole country as far as the Sadánra or Gandak. We also read that Arjuna during his exile visited the holy places and at Hardwár met Ulúpi, the daughter of the Nága Rája Vásuki, whom he espoused. The same record gives a brilliant description of the city of the Nága Rája, that it "contained two thousand krores of serpent inhabitants; and the wives of all those serpents were of consummate beauty. And the city contained more jewels than any person in the world has ever seen, and there was a lake there which contained the water of life and in which all the serpents used to bathe." Throughout the Mahábhárata the Himálaya is considered holy ground, the well-loved home of the gods, where there were many places of pilgrimage (*tirthas*).

After the destruction of Dwáraka, when the Pándavas were told by Vyása that their power had departed and that they should now think of heaven alone, Pándavas retire to the Himálaya. it was to the Himálaya that they retired. Placing Parikshit on the throne of Hastinápur and Yuyutsu in Indraprastha, "Yudhishtira then took off his earrings and necklace and all the jewels from his fingers and arms and all his royal raiment: and he and his brethren, and their wife Draupadi, clothed themselves after the manner of devotees in vestments made of the bark of trees. And the five brethren threw the fire of their domestic sacrifices and cookery into the Ganges and went forth from the city following each other. First walked Yudhishtira, then Bhíma, then Arjuna, then Nákula, then Sahdeva, then Draupadi, and then a dog. And they went through the country of Banga toward the rising of the sun; and after passing through many lands they reached the Himálaya mountain, and there they died one after the other and were transported to the heaven of Indra." From Kurmáchal in the extreme east near the Káli to Jamnotri and the Dún the wanderings of the Pándavas are noted by some rock or stream commemorating some exploit or calling to mind some scene in the story of their travels. At Deo Dhúra, the grey granite boulders near the crest of the ridge are said to have been thrown there in sport by the Pándavas. Close

to the temple of Devi in the same place are two large boulders, the uppermost of which, called 'Ran-sila,' is cleft right through the centre by a deep fresh-looking fissure, at right angles to which there is a similar rift in the lower rock. A smaller boulder on the top is said to have been the weapon by which Bhīma Sena produced these fissures and the print of his five fingers is still pointed out. Ran-sila itself is marked with the lines for carrying on the gambling game of *pachisi* which even in their wanderings the Pándavas could not abandon. They are also the reputed founders of the five temples to Siva as Kedáreswar and did penance at Pándukeswar close to Badarináth. All along the course of the sacred river are pools and streams, temples and rocks, sacred to the Pándavas and across the Ganges in Tibri, the course of the Jumna is in a lesser degree consecrated to their memory. At Bhímghora above Hardwár the priests show the imprint of the hoofs of Bhīma's horse, and they say that Drona, the preceptor of the Pándavas, resided in the eastern portion of the valley of Dehra Dún, the Drona-ka-asrama of the Kedára-khanda.

The law-book of the Mánavas is clearly in its present form the
 outcome of many hands at various times,
Manu. but will be more conveniently referred to
 under the received title 'Manu.' It is still the great authority
 on the systematic ethnography and cosmogony of the Hindus,
 and affords us further evidence of the existence of the belief
 that the majority of the border tribes were regarded as of the same
 stock as the Aryas, but degraded members of it. It tells us that
 the references made in the Shástras to castes other than the four is
 merely "for the sake of convenience and conformity to common
 usage." Even the very lowest classes, such as the Nishádas and
 Chándálas, are derived from the miscegenation of the four castes.
 Like the authors of the Mahábhárata, Manu affirms that the Kshat-
 triya tribes of Paundrakas, Odras, Draviras, Kámbojas, Yavanas,
 Sakas, Páradas, Pahlavas, Chínas, Kirátas, Daradas, and Khasas,
 became Vrishhalas or outcasts from the extinction of sacred rites and
 from having no intercourse with Brahmans. Further, as already
 noticed, he declares that "all the tribes which by loss of sacred rites
 and the like have become outcasts from the pale of the four castes,
 whether they speak the language of the Mlechchhas or of the Aryas,

are called *Dasyus*." Here we have again the connecting link between the earlier and the later records and the natural explanation of the entire phenomena. As in Africa, at the present day, the tribes converted to Islám, leaving behind them their heathen practices, look with contempt and even hatred on their brethren in race who adhere to paganism, so the Aryas despised those of their race who remained content with the primitive belief which was once their common property and refused to accept the sacerdotal innovations, or who being of non-Aryan descent declined to accept the Brahmanical creed. The terms of abuse used towards these tribes by the priestly writers prove nothing more than the existence of the '*odium theologicum*' which has burned fiercely in all climes and countries from the earliest dawn of history to the present day. The preceding extracts show that even in the most orthodox writings the Khasas are looked on more as heretical members of the great Aryan family than as outcast aborigines, and that from a very early period they have been recognised as an important tribe in Upper India.

According to the *Mahábhárata*, Krishna visited the hermitage of Upamanyu in the Himálaya, where "the mongoose sports in a friendly fashion with snakes and tigers with deer." He also visited the Pándavas in their exile and is said to have himself, in company with Arjuna, lived a considerable time in Badari. Arjuna as Nara and Krishna as Náráyana "mounted on the chariot of righteousness, performed an undecaying penance on the mountain Gandhamádana." There they were visited by the sage Nárada, who "descended rapidly from the sky to the spacious Badari. There he saw the ancient gods, the two most excellent Rishis," and there he remained with them for a thousand years. Again it is said that the Chakravarti Rája Dambhodbhava, having an overweening conceit of his own prowess, visited Gandhamádana (Badari group of peaks) with his army and resolved to overthrow the Rishis. They tried to put him off by saying that they were divested of all earthly passions and lived in an atmosphere of peace. Dambhodbhava, however, resolved to attack them, when Nára took a handful of straws and scattering them to the winds so whitened the air and so filled the eyes, ears, and noses of the men of Dambhodbhava's army that they fell at Nára's feet and sued for peace: referring doubtless to a snow-storm encountered by the

invaders. In another part of the same record Krishna is thus addressed :—" Formerly Krishna, thou didst roam for ten thousand years on Gandhamádana, where the Muni Sáyangriha was. * * Thou didst stand on the spacious Badari, a hundred years with thy arms aloft, on one foot, subsisting on air, with thy outer garments thrown off, emaciated, with thy veins swollen." Badari is also called Siddhásrawa, 'the hermitage of the perfect', "where the illustrious Vishnu was perfected when performing a great act of austerities in the form of a dwarf, when the empire of the three worlds had been taken away from Indra by Bali." Tradition states that Ráma performed austerities at Rikhikes, and his brother Lachhman at Tapuban, in order to wipe away the sin of slaying Rávana. The grammarian Vararuchi also visited the Himálaya and by propitiating Mahádeva obtained from him the materials for his Pániniya grammar.¹ When near his death Vararuchi again retired to Badari, and "throwing off this mortal coil, resumed as Pushpadanta² his seat among the brilliant spirits of heaven." Gunádhya, brother of Pushpadanta, followed his example and worshipped 'the crescent-crested deity' in his mountain home. It was here, too, that Sahasránika, rája of Kausámbhi, when wearied with the toils of state, spent his declining years in solitude and devotion.³

We now come to the Pauránik period and find that the legends concerning the Himálaya have grown with the people, and that in the later development of Hindu mythology they occupy a much more important place. There is little doubt that the story of Mount Meru, the Olympus of the Indian gods, was suggested by the sight of the lofty summits of the Himálaya crowned with perpetual snow. In the geographical notices contained in the Puránas we have the traditional distribution of the countries and peoples then known to the compilers, and to their pages, amongst much that is puerile and absurd, we must look for the little further aid to our researches that can be derived from indigenous sources. Lassen⁴ writes :—" It is true that

¹ Wilson, III, 174.

² *Ibid.*, 184: Badari is mentioned in the Pádma Purána as one of the celebrated Vaisnavya tirthas where bathing is particularly enjoined. Pushpadanta was born as Devadatta and from worshipping Mahádeo was through his favour united with Jaya, daughter of Raja Sasarma, and retired in his old age to Badari. So also in the Yámana Purána the sacred character of the linge at Kadár and Badari is extolled: *Ibid.*, VI., lxxv.

³ *Ibid.*, III., 128.

⁴ Muir, II., 327.

we might be tempted to discover in the superior sacredness which they (the Aryas) ascribe to the north, a reference, unintelligible to themselves, to a closer connexion which they had formerly with the northern countries : for the abodes of most of the gods are placed to the north in and beyond the Himálaya and the holy and wonderful mountain of Meru is situated in the remotest regions in the same direction. A more exact examination will, however, lead to the conviction that the conception to which we have referred has been developed in India itself and is to be derived from the peculiar character of the northern mountain-range. The daily prospect of the snowy summit of the Himálaya glittering far and wide over the plains and in the strictest sense insurmountable, and the knowledge which they had of the entirely different character of the table-land beyond, with its extensive and tranquil domains, its clear and cloudless sky and peculiar natural productions, would necessarily designate the north as the abode of the gods and the theatre of wonders ; while its holiness is explicable from the irresistible impression produced upon the mind by surrounding nature. Uttara Kuru, the Elysium in the remotest north, may be most properly regarded as an ideal picture, created by the imagination of a life of tranquil felicity, and not as a recollection of any early residence of the Kurus in the north. Such at least is true of the representation which we have of this country in the epic poems. It is, however, probable that originally, and as late as the Vaidik era, a recollection of this sort attached itself to that country, though in later times no trace of it has been preserved."

It is not difficult, therefore, to picture the Aryan immigrants arriving at the Ganges and sending some adventurous spirits to explore its sources.

Discovery of Kailás.

After traversing the difficult passes across the snowy range and the inclement table-land of Tibet, they discovered the group of mountains called Kailás¹ and the lakes from which flowed forth the great rivers to water and give life to the whole earth. The rugged grandeur of the scene, the awful solitude and the trials and dangers of the way itself naturally suggested to an imaginative and simple people that they had at length rediscovered the golden land,² the

¹ The name Kailás seems to be of Tibetan origin which would apparently show that the Hindus discovered the country around Minastarovar after it had already been occupied by a Tibetan race.

² Hiran maya, Svarna-bhúmi.

true homes of their gods whom they had worshipped when appearing under milder forms as storm and fire and rain in the plains below. In the course of time, Brahmanical innovations caused the worship of Agni, Váyu or Indra, Súra and the other Vaidik gods to give place to a system where the intervention of a sacerdotal caste between the worshipper and his creator was essential. The transfer to the new system of the localities already held sacred soon followed, and Brahma, Vishnu, and Siva, the triad of the new revelation, took possession of the Himálaya. In place of domestic worship offered by individuals for individual good and addressed to unreal presences, a highly ornate ritual was introduced administered by a consecrated class and addressed to visible types. It is in this later stage that we find Hinduism as described in the Puránas, so late indeed that the worship of Brahma had already almost become obsolete. In the Vedas,¹ "the one universal Being is of a higher order than a personification of attributes or elements and however imperfectly conceived, or unworthily described is God. In the Puránas, the only Supreme Being is supposed to be manifest in the person of Siva or Vishnu either in the way of illusion or in sport; and one or other of these divinities is therefore also the cause of all that is,—is, himself, all that exists." The Puránas exhibit a sectarian fervour and exclusiveness not found in the Ramáyana and only to a qualified extent in the Mahábhárata. "They are no longer," says Professor Wilson, "authorities for the Hindu belief as a whole; they are special guides for separate and, sometimes, conflicting branches of it; compiled for the evident purpose of promoting preferential or, in some cases, the sole worship of Vishnu or Siva."

Before proceeding further with our subject, it will be convenient to describe here the Puránas which form the class of writings that give us the greatest details concerning the Himálaya. There are eighteen Puránas compiled at various times by different hands.² The Vishnu Purána which has been translated by Professor H. H. Wilson and edited by Dr. F. Hall is the principal and next to the Bhágavata

¹ Wilson's Works, VI., xiii: Gazetteer, II., 61. ² They are the (1) Bráhma, (2) Pádma, (3) Vaishnava, (4) Shalva, (5) Bhágavata, (6) Náradiya, (7) Márkandeya, (8) Agneya, (9) Bhavishya, (10) Brahma Vaivarta, (11) Lainga, (12) Várisa, (13) Skánda, (14) Vámana, (15) Káurma, (16) Mátaya, (17) Gánda, and (18) Brahmánda.

is still regarded as the great authority on matters connected with their religion by large sections of the Hindu community. Both are compiled in the form of a dialogue in which some person relates the contents in reply to the inquiries of another. In the extracts hereafter given from the Skánda Purána, the narrator is Súta,¹ or properly 'a Súta' (i.e., a bard or panegyrist and pupil of Vyása, the generic name for a compiler or editor). Each Purána is divided into *khandas* or books, which are again subdivided into chapters which often consist of *máhátmayas* or collections of local legends like the Mánasa-khanda and Kedára-khanda of the Skánda Purána noticed hereafter. Regarding this latter work, Professor Wilson writes :—"It is uniformly agreed that the Skánda Purána, in a collective form, has no existence and the fragments in the shape of *samhitas*, *khandas* and *máhátmayas*, which are affirmed in various parts of India to be portions of the Purána, present a much more formidable mass of stanzas than even the immense number (81,100) of which it is said to consist." The more celebrated of these portions are the Káshi-khanda, giving a description of Benares, and the Utkala-khanda, giving an account of the holy places in Orissa. Besides these there are a Himavat-khanda devoted to Nepál, a Rewa-khanda, a Brahmottara-khanda and others. There are also several separate *samhitas* or collections. The *máhátmayas* are, however, the most numerous, and even Colonel Vans Kennedy thinks that they "have rather a questionable appearance." Many of the *khandas*, such as the Káshi-khanda, are quite as local as the *máhátmayas*, "being legendary stories relating to the erection of certain temples or groups of temples and to certain *lings*; the interested origin of which renders them, very reasonably, objects of suspicion." Professor Wilson adds :—"In the present state of our acquaintance with the reputed portions of the Skánda Purána, my own views of their authenticity are so opposed to those entertained by Colonel Vans Kennedy, that instead of admitting all the *samhitas* and *khandas* to be genuine, I doubt if any one of them was ever a part of the Skánda Purána." * * "There are in all parts of India various compilations ascribed to the Puránas which never formed any portion of their contents and which, although offering, sometimes, useful local information and valuable as preserving local

¹ Wilson's Works, VI., xviii.

popular traditions, are not, in justice, to be confounded with the Puránas so as to cause them to be charged with even more serious errors and anachronisms than those of which they are guilty." The Skánda and Brahmánda¹ Puránas are those to which the majority of the modern fabrications have been attributed by their authors who have "grafted personages and fictions of their own invention on a few hints from older authorities." They retain the form of the genuine Purána, the dialogue and many of the stories giving them the local colouring necessary for the particular object in view. "Still," as I have elsewhere said,² "imperfect as they are, and disfigured by absurd stories and interpolations of later times, the Puránas with the great epic poems, are the chief amongst the few historical records we possess of any antiquity to assist us in compiling an account of the heroic age."

We shall now briefly refer to the geography of the Puránas

The fashioning of the earth. which commences with the chapter on cosmogony and is here closely connected with the geography of northern Kumaon and the adjoining part of Tibet. One account of the creation of the earth relates how Vishnu, in his boar incarnation, supported the earth on his tusks³ as it was about to sink into the waters and then fixed it on the thousand heads of the king Ananta; whilst another likens the earth to a lotus, the stalk of which springs from the navel of Vishnu as he lies asleep at the bottom of the ocean. The world was then in chaos and Brahma arose and formed the seven great island continents :—Jambu, Plaksha, Sálmalí, Kusa, Krauncha, Súka, and Pushkara, separated from each other by the seas.⁴ Jambu-dwípa is again divided into nine *varshas* or regions and in the centre of all is the glorious mountain of Meru, of various colours :⁵ on the east it is white like a Brahman ; on the south it is yellow like a Vaisya ; on the north it is red like the dawning morn or a Kshattriya, and on the west it is dark

¹ Colonel Wilford in exposing the forgeries of his own pandit who had fabricated a *Skánda* for each of these Puránas calls the Skánda, Brahmánda and Pádma Puránas the "*Puránas of thieves and impostors.*" *As. Res.*, VIII., 252.
² *Gazetteer*, II., 61. ³ Compare Ward, I., 8; Wilson, VI., 39. To the present day the local theory regarding earthquakes is that they are due to Vishnu changing his burthen from one trunk to another. ⁴ It is said that all the islands except Jambu have perished. Between Jambu and Plaksha is the salt sea; between the latter and Sálmalí, a sea of sugarcane juice and then a sea of wine, of clarified butter, of gauds, of milk and of fresh water. ⁵ Compare the existing Tibetan appellations :—*Gye-sak*, the great black or China; *Gye-gar*, the great white or India; and *Gye-ser*, the great yellow or Russia.

like the dry leaves or a Sudra. Meru is circular in shape and forms the germ of the lotus.¹ It stands on the most elevated portion of the central division of Jambu known as Ilāvrita. South of Meru the Nishadha mountains separate Ilāvrita from Harivarsha; south of the latter, the Hemakūta divides it from Kimpurusha, and further south the third or Himavat range forms the boundary between Kimpurusha and Bhārata. Similarly three ranges of mountains form the boundaries of countries on the north. First come the Nīla range between Ilāvrita and Rāmyaka on the north; then the Sweta mountains bordering the country of Hiranmaya where there is much gold; and again the Sringin range separating Hiranmaya from the country of the Uttara Kurus. All these names would lead us to believe that the writers had the country to the north of the Kashmīr valley in view, though the names subsequently mentioned are clearly connected with upper Garhwāl and Kumaon. To the east of Ilāvrita lies the country of Bhadrāsva and to the west the country of Ketumāla. Four mountains form buttresses to Meru: on the east is Mandara; on the south Gandhamādapa or Meru-mandara; on the west Vipula or Kumuda, and on the north Supārswa. On each of these stands severally a *kadam-tree* (*Anthocephalus cadamba*), a *jambu-tree* (*Eugenia Jambolana*), a *pipul-tree* (*Ficus religiosa*), and a *nyagrodha-tree* (*Ficus indica*). There are also four great forests and four great lakes,² the waters of which are partaken of by the gods and which are called Arunoda, Mahābhadra, Asitoda, and Mānasa. The last is the Māna-sarovara of the

¹ In the shape like an inverted cone.

² For a long description of each lake from the Vāyu Purāna see Wilford in *As. Res.*, VIII, 326. According to him the Purānas place a great lake called Bindu-sarovara to the north of Māna-sarovara, and but for its distance it might be identified with the Ráwan Hrad or Rákhas Tái, the Cho Lagan of the Tibetans which adjoins and is connected with Cho Mápán. On the Chinese map of India O-neou-tohi is given as the name of lake Māna and the Gangri range has the same name. In the Ceylonese books it is called Anotattá. The Arunoda lake or 'lake of the dawn,' which is said to lie east of Māna, may be the Cho Koukyu or Gungyu-cho, smaller but similar to the others, which lies near the source of the Brahmaputra. To the west of Māna is the Sitoda lake, from which issues the Apara Gandaki or 'western Gandak,' identified by Wilford with the Chakhu or Orus: so that this lake must be the lake of the Fámír, but is more probably the Cho Moriri, the source of the western Satiaj. The Mahābhadra lake in the north may be identified with one of the lakes of the table-land. There appears to be a mingling of facts true of the country to the north of Kashmír with facts true of the country north of Kumaon in these accounts. In some Meru clearly indicates the group of mountains to the north and west of Kashmír, and in others these in the neighbourhood of lake Māna.

Hindus and Cho Mápán of the Tibetans, of which more hereafter.

Meru in its widest sense embraces the elevated table-land of western Tibet between Kailás on the east and the Muztágh range on the west and between the Himavat on the south and the Kuen-luen range on the north. "It lies between them like the pericarp of a lotus and the countries of Bhárata, Ketumála Bhadráswa, and Uttara Kuru lie beyond them like the leaves of a lotus." In the valleys of these mountains are the favourite resorts of the Siddhas and Cháranas and along their slopes are agreeable forests and pleasant cities peopled by celestial spirits, whilst the Gandharvas, Yakshas, Rákshasas, Daityas, and Dánavas pursue their pastimes in the vales. "There, in short, are the regions of Swarga (Paradise), the seats of the righteous and where the wicked do not arrive even after a hundred births, * * there is no sorrow, nor weariness, nor anxiety, nor hunger, nor apprehension; the inhabitants are exempt from all infirmity and pain and live in uninterrupted enjoyment for ten or twelve thousand years. Deví never sends rain upon them, for the earth abounds with water. In those places there is no distinction or any succession of ages." This account agrees well with Homer's description¹ of Olympus in the *Odyssey*, vi., 42 :—

"Olympus, where they say the blessed gods
Repose for ever in secure abodes:
No stormy blasts athwart those summits sweep,
No showers or snows bedew the sacred steep;
But cloudless skies serene above are spread
And golden radiance plays around its head."

The accompanying figure² represents the worldly lotus floating upon the waters of the ocean which is surrounded by the Suvarna-bhúmi or land of gold and the mountains of the Lokalokas and is in

¹ Quoted by Mair, II., 280. The same idea is familiar to us in the Scotch song, the "Land o' the Leal":—

"There's nae sorrow there, Jean;
There's neither cauld nor care, Jean,
The day is aye fair i' the land o' the Leal."

² After Wilford: *As. Res.*, VIII., 278.

east, Indra sitting upon a *vimána*, resplendent like a thousand suns; in the second interval between east and south is Agni or Jivani, from whom sprang the Vedas. In succession comes Vaivaswata-Yáma called by mankind Su-Sanyáma, Virupaksha, Varuna also called Subhávati, Váyu called Gandhávati, Mahodaya and Isána. According to the Vishnu Purána, the city of Brahma is enclosed by the Ganges, which, issuing from the foot of Vishnu and washing the lunar orb, falls here from the skies and after encircling the city divides into four mighty rivers flowing in opposite directions. These rivers¹ are the Sita, which passes through the country of Bhadráswa; the Alaknanda, which flows south to Bhárata; the Chakshu, which traverses Ketumála, and the Bhadra, which washes the country of the Uttara Kurus. Other Puránas describe the detention of the Ganges in the tresses of Síva until set free by king Bhagirath and escaping thence formed seven streams:—the Nalini, Hládini, and Pávani going east; the Chakshu, Sita, and Sindhu going west; and the Bhágirathi going south. The Síta is supposed to flow from an elephant's head, the Alaknanda from a cow's head, the Chakshu from a horse's head, and the Bhadra from a lion's head, and they are so represented on the Chinese map compiled in the fifteenth century to illustrate the travels of Chinese pilgrims in India which will be found in the pocket to this volume. Wilson² would identify the Bhadra with the Obi, the Sita with the Hoang-ho, the Alaknanda with the Ganges, and the Chakshu with the Oxus, and this may be what is intended, for according to Chinese accounts, the Síta or Yarkand river, which flows into Lob-nor, is supposed to have an underground connection with the swamps near Kokonor, which form the head-waters of the Hoang-ho.³ As a matter of fact the local traditions identify the Bhadra with the Indus or 'lion-river,' the *Sing-chin-kamba* (or *khempa*) of the Tibetans⁴ on the north; the

¹ Here clearly in order the Hoang-ho, Alaknanda, Oxus, and Indus.

² VII.,

182, 172. ³ Klaproth, *Mém. Zol. Asie*, II., 411.

⁴ Herbert obtained

the same Tibetan names in 1819, *As. Res.*, XV. In the great Chinese map prepared by order of Khian-jeung, the four corners or gates of the Mánas lake are called the lion, elephant, horse and ox gates: *Tou-ge-hai* on the east, *Chien-ge-hai* on the south, *Arak-hai* on the west and *Sude-jeung* on the north. The French explorers give the names *Sing-chin-kamba* or *Sing-chi-kamba* or *Sing-chi-kamba* to the Indus; *Lan-jin-kamba* to the Ganges; *Tan-jin-kamba* to the Brahmaputra and *Sing-chi-kamba* to the Karnál. Klaproth (I., 419), in 1821, calls the Indus at the *Sing-chi-kamba*, and again (1824, 261) writes—"The great eastern branch of the Indus, as termed in the country, the *Sing-chi-kamba*, the river that rises in a lion's mouth in reference to the Tibetan notion borrowed perhaps from us, of the origin of four great rivers from the mouths of as many

Chakshu with the Brahmaputra or 'horse-river,' the *Tamjyab-kamba* of the Tibetans on the east; the Alaknanda with the Satadru or Satlaj or 'bull-river,' the *Lang-chin-kamba* of the Tibetans on the west, whilst the fourth river is the Karnáli or *Mapchu-kamba* or 'peacock-river' on the south. All these rivers take their rise in the Mána and Rákhas lakes or in the mountains near them known as Kailása by the Hindus.

A volume might be written on Meru alone, but we must return to our geographical investigations and first to the sub-divisions of the island-continent Jambu. It was Agnidhra who, according to the Vishnu Purána, divided Jambu into nine portions amongst his nine sons—Nábhi, Kimpurusha, Harivarsha, Ilávríta, Ramya, Hiranvat, Kuru, Bhadrásva, and Ketumála. Nábhi received the country called Hima south of the Himavat mountains and was blessed with a son named Rishabha, whose eldest son was Bharata, after whom the country was named Bhárata. This is the name therefore of the country to the north of the salt sea and south of the snowy mountains which is described as again divided into nine subordinate portions, *vis.*,—Indra-dwípa, Kaserumat, Támravarna, Gabhastimat, Nága-dwípa, Saumya, Gándharva, and Várúna and the ninth unnamed.¹ It has seven main chains of mountains:—Mahendra (in Orissa); Malaya (southern portion of western gháts); Sahya (northern portion of the western gháts); Suktimat; Riksha (in Gondwána); Vindhya and Páripátra (northern and western Vindhya). Amongst the rivers mention is made of the Satadru (Satlaj) and Chandrabhága (Chínáb) as flowing from the Himavat. The Váyu

animals: as the Indus from the lion's mouth; the Ganges, *Má-ché-áka-áb*, from that of the peacock; the Satlaj, *Lang-chin-áka-áb*, from that of the ' ' ' and the *Ster-áka-áb* or river of Tibet from the mouth of the horse." Gerard (p. 2) calls the Satlaj the *Lang-ching-áka* or *Langking ámpa*; the Indus, the *Singcheo* or *Singkingtoe* or *Singring ámpa*; and the Brahmaputra, the *Tamjeo*, *Damcho* or *Ercámo*. He identifies the Tamjeo with the Tsango or Tsangiro of Georgi and the Damcho with Turner's river *Erickembo* at Tashi-Liampo. Lieutenant J. D. Cunningham (Notes, p. 63) gives the names as follows: the Indus, *Singchin áka-áb* (or *ámpa*); the Satlaj, *Langchin áka-áb*; the Gange (Karnáli), *Manchin áka-áb*; and the Brahmaputra (Brahmaputra), *Taché* or *Tawjéed áka-áb*. Captain H. Strobey (1854) gives the Tibetan names most correctly thus:—*Taché-Tsangpo* or horse-river (Brahmaputra); *Sangé-Tsangpo* or lion-river (Indus); *Langchin-Tsangpo* or elephant river (Satlaj) and *Manchin-Tsangpo* or peacock-river (Karnáli). *Sing* or *áka* is lion; *lang* is bull (not elephant; *áka* in Tibetan is 'great bull'); *man* is peacock; ' ' is horse; *chin* is great ' ' ' 'mouth' and ' ' ' means "issuing from"; so *áka-áb* is a corruption of ' ' with the affix ' ' (Ákshépa). ¹ The unnamed portion is called *Hu* in the *Frühden* and *Meru* *Shástra* and by *Shástra* *Ákshépa* and represents *Hu* as the Ganges is said to flow through it.

Purána adds a number of inferior mountains and gives the following as the rivers of Himavat :—Ganga, Sindhu, Sarasvati, Satadru (Satlaj), Chandrabhága (Chínáb), Yamuna (Jumna), Sarayu (Sarju), Airavati (Ravi), Vitasta (Jhelam), Vipása (Biás), Devika (Ghágra), Kuhu, Gomati (Gumti), Dhutpápa, (old junction of Kaggar and Satlaj), Báhuda, Drishadvati (Kaggar), Kausiki (Kosi), Vritiya, Nirvira, Gandaki (Gandak), Ikshu (affluent of the Brahmaputra), and Lohita (ditto).

In the Brahmánda and Váyu Puránas we have favorable exam-

Local geography in the Brahmánda Purána. ples of a more local and detailed geographical description and are able to identify many of the places referred to. It will, however, be only necessary to give the text of a portion as an example. The first extract is from Wilford's translation of the Brahmánda Purána, in which the following account of the streams that flow from Meru is given :—

“The water of the ocean coming from heaven upon Meru is like *amrita*, and from it arises a river which through seven channels encircles Meru for a space of eighty-four yojanas and then divides into four streams springing over the four sacred hills towards the four cardinal points. One stream goes over Mandara in the east and encircles the beautiful grove of Chaitraratha and falls into the Arunoda lake and goes thence to the mountains of Sitanta,¹ Sumanta, Sumanjasa, Máddyavanta to Valkanka, Mani, Rishabha, from hill to hill. It then falls to the ground and waters the country of Bhadrásava, a beautiful and extensive island, and then it joins the eastern ocean near the Purva-dwipa or eastern island. The southern branch goes to Gandhamádana² from hill to hill and from stone to stone. It encircles the forest of Gandhamádana, or Deva-nandana, where it is called the Alakananda.³ It goes to the northern lake called Mánasa, thence to the king of mountains with three summits, thence to the mountains of Kalinga, Eucaka, Nishadha, Tamrábha,⁴ Swetodara, Kumula, ‘another king of hills’ Vasudhára,⁵ Hemakúta, Devasinga, the great mountain Pisáchaka, the five-peaked Panchakúta,⁶ thence to Kailása and the Himavat, and then this very propitious stream falls into the southern ocean. Mahádeva received it on his own head from which, spreading all over his body, its waters are become most efficacious. It falls then on Himáchal, from which it goes over the earth: hence its name Ganga. To the west (*apara*) is a large river encircling the forests of Valbháka. It is most propitious and falls into the lake Sitoda. Thence it goes to the Subakaha mountains and to the Farnoda lake, to the mountains called Síkhi, Kákha-vaiddrya, Kapila-Gandhamádana, Pinjara, Kumuda-madhumañta,

¹ The range near the confluence of the Chandra and the Bhága. ² The Sakari group in upper Garhwál. ³ Flows through the Niti valley. ⁴ Upper range, of which there are many. ⁵ There is a stream and fountain of this name near Badrináth. ⁶ The Panchachul group; the great mountain with these summits will be Triśul. I take it that nearly all these allusions refer to the Kumaon Himalaya and are local.

Anjana, Mukúta-kriahna, Sweta filled with large snakes, to the thousand-peaked mountain, the Párijáta mountain, through Ketumála, a large country, and then falls into the western ocean. North from Meru there falls a branch called Bhadrá and Bhadrá-soma upon Suparsva of gold, which it encircles and goes to the lake called Sítodaka in the forest of Bhadrá-soma. Thence to the mountains of Sankha-kúta, Vriha-vatsa, Níla, Kapinjala, Indraníla, Maháníla, Hemasinga, Swetaaringa, Sunága, the mount with a hundred peaks, Pushkara, Durja-rája, Varáha, Mayúra and Játudhi. After crossing a thousand lesser hills it goes to the three-peaked mountain called Visbuddha and then into the northern country to the Gandhamádana. Along the banks of the Apará-Gandika or western Gandak is the country of Ketumála, renowned for men mighty in deeds strong and powerful, and for women bright as the lotus, whom to see is to love. There is the great *panasa* tree¹ and there resides Iswara.² The eastern Gandak is in Bhadrásawa.³

In the Bráhma Purána it is said that Vishnu resides in Bhadrásawa with the countenance and the head of a horse : in Bhárata with the head of a tortoise (*kurma*) : in Ketu-mála with the head of a boar (*vardha*) : and in Kuru with the head of a fish (*matsya*). The Váyu Purána describes the country to the west of Meru as containing numerous valleys divided by ranges of hills.

About the mountains of Subaksha and Sikhisalla is a level country about a hundred yojanas in extent and there the ground emits flames.⁴ There is Vibhávasu or Vasu simply who presides over the fire burning without fuel. Within the mountain is the Mátu-linga, ten yojanas broad, and there is the hermitage of Vrihaspati. Like these two mountains the Kumuda and Anjana (black) ranges also enclose a valley between them.⁵ Between the great mountains Krishna and Pándura is a level country enclosing a valley abounding with the lotus called Ananta-sada.⁶ Between Sanku-kúta and the Vrihabha mountains is the Parushaka country, the abode of Kinnaras, Urugas, Nágas, and holy men. Between Kapinjala and Nága-salla is a tract adorned with many groves. It abounds with fruits and flowers. The Kinnaras and Urugas with tribes of pious and good men live there. There are beautiful groves of *drákshá* (vine), *nágaranga* (orange) and *badari* (stone-fruit) trees. The portion lying between the Pushpaka and Mahámegha mountains is as flat as the palm of the hand, devoid of trees and with very little water which is whitish. The soil is hard and tenacious and even

¹ As. Res., VIII., 354. The jack-tree, which does not grow in the hills; but neither does the *badari* or jujube grow near Badarináth, which is said in many descriptions to possess a tree of surpassing size and assigned to various species, *pipal*, *bargud*, *badari*, and here the jack.² Vishnu as Iswara.

³ Can only refer to Jwála-mukhi in the Kangra valley, with its celebrated Salva shrine.

⁴ Some connect the Kumuda mountains with the Comedii of Ptolemy, and if so with the Kashkára valley. In the Bráhmánda Purána, the country of Kusa is said to contain the Kumuda mountains and is hence also known as the Kumuda-dwipa. It contained the Kumudárasí river, probably the Kuser river, and amongst its inhabitants were the Sakas and Párasikas and Syámakas, i. e., the Indo-Skythic rulers of Kipin, Femians and the Sýdians.

⁵ The valley of Kashmir is still locally assigned to a Nágé race.

without grass. There are few animals and the few inhabitants have no fixed habitation. The whole country is called Kánan or Kánana.¹ There are several large lakes, likewise great trees and larger groves called Kánta. There are caves here in the mountains most dreary and dark, inaccessible to the rays of the sun, cold and difficult of access. In this country are Siddhas or prophets with the gift of miracles and learned and famous Brahmans. The next mountains are those of the Sitánta range, many yojanas in extent, abounding with all sorts of metals and gems. It is skirted by a most delightful country, well-watered and calveined with the harmonious noise of the black bee and frogs. There are towns with gates and the refreshing moisture of this country proceeds from Urupa and reuniting together forms a stream called the Váha of the moon or Chandraváha.² There amongst immense caves is Kridávana and the great forest of the Párijáta tree of the kings of the gods.³ There live the Siddhas and Yakshas in caves. To the east is the Kumuda peak with the eight towns of the proud Dánavas. Again in the many-peaked mountains of Vajraka live strong and terrible Rákshasas who are also called Nilakas. In Mahanila are fifteen towns of the Hayánanas or Asvamukhas, the horse-faced. They were originally Kinnaras courageous like Kárttikeya. There are fifteen chiefs of the Kinnaras elated with pride, and in caves below the ground abide people like snakes who live upon the golden stamens of certain flowers. In the hills above are a thousand abodes of the Daityas; the houses are elegant like high-embattled forts.⁴ In Venumat are three forts belonging to the Romakas, Ulukas and Mahánetras, three principal tribes of the Vidyádharas whose mighty deeds equal those of Indra.⁵

On Vaikanka reside the offspring of Garuda, the destroyer of serpents: it abounds with precious metals and precious stones. A strong wind swiftly passes over this mountain, in a human form, called Sugriva. The offspring of Garuda in the shape of birds fly about this mountain: they are strong, fly quickly and mighty are their achievements.⁶ On Karaja always resides the mighty lord of living beings, riding upon a bull: hence called Vrishabhánka Sankara, the chief of Yogis. The inhabitants like Mahádeva always carry poison about them: they are Pramathas and difficult of access. Mahádeva resides there amongst them. On Vasadhára in Vasumati are the *ethéras* or places of the eight forms of Mahádeva. They are full of splendour and proper places of worship. There are seven places of Siddhas and the place of Brahma of the

¹ This can be no other than Bishahr, including Kunáor, the Kumu of the Tibetans and still celebrated for its vines, oranges and apricots. The inhabitants were called Kinnaras, *Aśvís* Kinnas.

² The Chandras and the Bhágas, which unite to form the Chandrabhága.

³ The noble forests of deodára which form such a feature of this part of the country.

⁴ This may refer to the strikingly tower-like structures in the upper valleys towards Balti and Ladák.

⁵ From the Vishnu Purána (Hall's Wilson's V. P., II., 193) we learn that Venumat was son of Jyeshthamant, king of Kusa, the Hindu-kush country which was bounded by the Sakti country. The name Vidyádhara or 'magical-knowledge' to be a name applied to many of the hill-tribes who were supposed to be possessed of magical powers. It is especially noted as a character of the people of the Svét valley, and the Romakas may possibly be represented by the 'Rum' of the Káira. The Nilakas inhabited Kashmir.

⁶ Elsewhere this land is called Deva-káta peopled by men as well as birds and fits in the Dwipa Sámudra. One tribe of these Gandharvas was called Ágnayas, servants of Kuvera, whose principal employment was to explore the bowels of the earth in search of wealth. Can these be the Ágní-tribe of miners so well known in these hills?

four faces, the mighty lord of created things, on a high peak to which all living creatures bow. The eleven Rudras reside there on the Gaja-salla. Sumegha, the mount of the beautiful cloud, is full of minerals, with caves in its bosom and groves along its skirts. Here dwell the twelve Adityas and the eight forms of Rudra, also Vishnu, the Asvins and the good and perfect who are continually worshipped by the Yakshas, Gandharvas and Kinnaras with their king Kapinjala. On the five-peaked Anala, reside Rákshasas with Dánavas haughty, foes of the gods, great, strong and of mighty deeds. On Sataaringa or the hundred-peaked range reside the benevolent Yakshas and on Tamrábha is a town inhabited by the children of the snake race; Kádraveyas and Tákshakas. In the beautiful Visá-kacha are many caves and the famous abode of the god Kárttikeya. A town and settlement of the beneficent Sunábha, son of Garuda, occurs on Swetolaga. On the Paisáchaka mountain is a settlement of the Kuveras with a great palace to which the Yakshas and Gandharvas resort. Kinnaras reside on Kumuda; Mahánágas on Anjana; the towns and white houses of the Gandharvas are seen on Krishna and on Sweta or Pándura, the battlemented town of Vidyádhara Daityas and Dánavas reside on the range with a thousand peaks. On Sukúta reside the chiefs of the Pannágas; on Pushpaka many tribes of sages; on Supakaha or Subakaha are the mansions of Vaivaswata, Soma, Váyu and Nágrája, and there the Gandharvas, Kinnaras, Yakshas, Nágas and Vidyádhara worship their favourite deity.

From these statements we learn that the hill tribes to the west of Kumaon were Kinnaras, the ancestors of the Kunets of the present day and Yakshas or Khasas, that there were Nágas in Kashmir and Vidyádhara in the Swát valley, as well as Siddhas, Gandharvas, Dánavas and Daityas, names applied to various hill tribes, or perhaps more correctly to sections of those tribes following certain avocations. The name Vidyádhara is commonly applied to the people of the Kusa-dwípa, which is to be identified with the mountainous tract between the Indus and the Hindu-kush and which was bounded externally by Saka-dwípa, which may be assigned to Kipin or the Kábul valley occupied by Sakas in the first century before Christ. Through Sir John Strachey we are enabled to give a paraphrase of a portion of the section of the Skánda-Purána known as the Mánasa-khanda. It occurs in the usual form of a dialogue between Síta, a pupil of Vyása, and Janamejaya, the son of Parikshit, the Pándava ruler of Hastinapur, and professes to relate what was formerly communicated by Vyása to Vasishtha. In form and often in verbiage it follows the model of the elder Puránas and minutely describes the country from the lake Mánasarovar in Tibet to Nanda Devi and thence along the course of the Pindár river to Karnprayág.

Vishnu that they admired his power and would obey whatever orders he gave them. His order was that they should die by his hand, and he then killed them with the *chakra* called Sudarshana.¹ From the marrow (*meda*) of these Daityas was formed the world. Then Vishnu, in the shape of a tortoise, placed himself to support the earth and raised it out of the water.² Then Vishnu desired Brahma to create all that the world was to contain.

Brahma first created the three spheres of the earth, the sky, and the heaven; then he divided the earth into nine portions (*kluvulus*) and created wind and sound and time, past, present, and future, and work (*karm*) and desire and anger; then he created seven Rishis,³ and from anger he created Rudra. Thus were formed the three great deities: the duty of Brahma being to create, of Vishnu to preserve, and of Rudra or Siva to destroy. These are the three *gunas* or qualities. Kasyapa was the son of Marichi, one of the Rishis, and from his thirteen wives⁴ were born the Adityas,⁵ Dánavas,⁶ Daityas,⁷ Yakshas,⁸ Rákhasas,⁹ Apsaras,¹⁰

¹ 'Beautiful,' the discus of Vishnu or Krishna. ² In his Kurma or tortoise *avatár*. ³ The seven great Rishis in the constellation Ura-Major:—Marichi, Atri, Angiras, Pulastya, Pulaha, Kratu, and Vasishtha. ⁴ All daughters of Daksha. By (1) Aditi, Kasyapa had the twelve Adityas, a class of gods; (2) by Diti, the Daityas or Daityas; (3) by Danu, the Dánavas; (4) by Avashta, the Gandharvas; (5) by Surasa, a thousand winged serpents or dragons; (6) by Khasa the Yakshas and Rákhasas; (7) by Surabhi, cows and buffaloes; (8) by Vinata, Garuda or Suparna, king of the birds and enemy of the serpent race and Arma; (9) by Tánra, six daughters; (10) by Kadru, mighty, many-headed serpents, such as Sessa, Vísuki, Takshaka, Sankhu, Sweta, Naga, Karkotaka, Dhananjaya, Kapila, Náhuha, Mani, &c.; (11) by Krotiharasa, all wild animals (*dasskrita* or sharp-toothed), Bhútas or goblins and Pistéhas; (12) by Ira, the vegetable kingdom; and (13) by Muni, the Apsaras. All these names are connected with pre-Aryan tribes. ⁵ The Adityas were the assistants of the creator regenerated in the present Manwantara as the twelve Adityas named:—Vishnu, Sakra, Aryaman, Dhátri, Tvashtri, Púshan, Vivasvat, Savitri, Mitra, Varuna, Ansa and Bhaga. ⁶ The Dánavas or descendants of Danu number amongst them Dvimúrdhan, Hayagriva, Puloman, Ekachakra, Táraka, Sunkara, Hayamukha, Ketu, Kálanáha, Láha, the Kákakapas and Páulomas, all names of note amongst the enemies of the gods. ⁷ The Daityas were also enemies of the god and descendants of Diti, whose two sons were Hiranyakasipu and Hiranyákaha. From the former came Anuháda, Hláda, Pruháda and Sanhíáda, and amongst their descendants were Táraka, Virochana and Bali. ⁸ A race like the Galyakas, attendant on Kúvera, the god of mines. Kiswara (V. P.) said to be produced by Brahma as beings emaciated with hunger, of hideous aspect and with long beards, and that crying out for food they were called Yakshas (from '*janah*,' 'to eat'). By the Buddhists they are sometimes classed with goblins and again as a merry joyous race. They are called Casiri by Milny, and in them we recognise the Kinaiyas. ⁹ A demon race named from '*ruksh*,' 'to injure.' Sometimes said to be descendants of the sage Pulastya, who was father of Vishrava, father of Rávan. Their principal abode was Lanka or Ceylon under their chief háva. ¹⁰ The Apsaras are female deities, the wives of the Gandharvas; they were produced at the churning of the ocean. For a long note about them see Goketucker's Sanskrit Dictionary, p. 222, reproduced in Wilson. VII, 80. The Padma Purána makes the Kashmiri Váchi mother of both the Apsaras and Gandharvas.

Gandharvas,¹ Nāgas,² Siddhas,³ Vidyādhara,⁴ birds, beasts and everything contained in the world.

*Raja Vena.*⁵

From the Rishi Atri came the Raja Anga, and from him Vena, who tyrannised over the world so that all mankind rebelled against him and killed him. Then they took his body and rubbed it, and from the right side sprang forth Prithu for their king. During the reign of Vena all plants had perished by reason of his tyranny, and when Prithu saw this, he was wrath and took his bow and arrows to destroy the earth, and she, in the form of a cow, fled from him through the three spheres, but no one dared to shelter her for fear of Vena. Then in despair she stopped and demanded the protection and pardon of the king. He consented on condition that the earth should deliver up the plants that she had hidden. To this she agreed and asked the king to remove the mountains which covered her and which prevented the spread of vegetation. Then Prithu with his bow uprooted the mountains and heaped them up one on the other, and made the earth level and called her after his own name 'Prithwi.' Then, that the earth might again produce food for man, Prithu created the calf Sváyambhuva Manu, and with his own hand milked from the earth all plants and vegetables. Then

¹ A celestial race living in the sky and guarding the Soma and governed by Varuna as their wive, the Apsaras, are ruled by Soma. They are learned in medicinal herbs, regulate the course of the asterisms, follow after women and are desirous of intercourse with them. In the later legends they are the choristers of Indra's heaven and are held intermediate between men and gods. See further Wilson's Works, VII., 20-24.

² The serpent race.

³ From

'*siddh*,' implying the idea of perfection: in legends, a semi-divine race of great purity and holiness who reside in the ether and are possessed of the eight great supernatural faculties, the power of becoming as small as a mote and the like. "Those who are 'the holders of knowledge' which is of four kinds: (1), *Yajña-vidya*, or knowledge of religious ritual; (2), *Mahā-vidya*, or great knowledge leading to the Tāntrika worship of the female principle; (3), *Gūhya-vidya*, or knowledge of spells and necromancy; and (4), *Ātma-vidya*, or knowledge of the soul or true wisdom.

⁴ The story of Vena is narrated in the Vishnu Purāna (Wilson, VII., 179). Sanātha, daughter of Mṛityu (death), was mother of Vena, the celebrated Ben of Hindu legends. (See Bijnor Gazetteer, V.) He was inaugurated universal monarch by the Rishis, but immediately proclaimed that no worship should be performed, no oblations offered, and that no gifts should be bestowed on Brahmaṅs; that all gods were present in the person of the king, who is made up of all that is divine. The enraged priests slew the king, and to put an end to the anarchy which arose they took his body and rubbed it, and from its left side sprang forth "a being of a complexion like a charred stake, with flattened features and of dwarfish stature. "What am I to do?" said he to the sages. "Sit down" (*nishāda*) said they, and hence the name Ni-śāda given to the aborigines of the plains. From the right arm of Vena sprang forth Prithu, to whom Mahādeva gave his bow *Ajagava* and celestial arrows. Prithu prospered and gave his name to the earth and was the first ruler to whom the title of Māja was applied. There is little doubt that he was an Indo-Skythian prince.

the gods and demons all milked the earth of various virtues, so that the earth fled to Brahma and complained to him of the everlasting milking. He took her with him to Vishnu and Siva, and Vishnu asked her what she desired. She asked that as the only means of saving herself the three gods should come and live with her. Vishnu answered that in the form of the serpent Ananta and the tortoise he had already saved the earth, and would again come to help her when her pain became too great to bear, but that now he would not go to her, and further he said that "at some time the head of Brahma will fall upon thee¹ (the earth), and Siva will come to sit upon the mountain of Tankara,² and the *ling* of Siva shall be established in many places. Then Vaivaswata Raja shall have a descendant called Bhagirath Rája, who shall bring down Ganga to thee. Then I will myself come in my dwarf incarnation³ to protect thee from the tyranny of the Rája Bali,⁴ and all the world will know that Vishnu has descended on thee. Then thy pains shall all be removed and the mountains shall cease to afflict thee with their load, for I shall be Himálaya, where Nárada and the Muni's for ever glorify me. Siva will be Kailása, where Ganesh and the other gods glorify him. Vindhyaçal will be Brahma, and thus shall the load of the mountains be removed." Then the earth said—"Why do you come in the form of mountains and not in your own form?" Vishnu answered—"The pleasure that exists in the mountains is greater than that of animate beings, for they feel no heat nor cold, nor pain, nor anger, nor fear, nor pleasure. We three gods as mountains will reside in the earth for the benefit of mankind." Then the three gods vanished and the earth returned to her former place.

Establishment of the Siva Lingas.

Daksha Prajapati⁵ had a daughter who was called Káli and who was married to Siva. Daksha summoned all the gods to worship them at Kankhala near Hardwár, but he omitted to invite Siva and his wife, for he admired neither the manner nor the appearance of Siva. The goddess Káli went to see the sight though uninvited, but her father was displeased at her coming and did not do her

¹ At Brahm-Kapóli, the great rock in the river above Bedrináth.
² near Jageswar.

³ In the *Vimana sutra*.

⁴ Tang-

⁵ The story of Daksha's sacrifice is very old and is repeated in nearly all the Puránas. For an account of his family see Wilson, VI., 166, and of the sacrifice, *Ibid.*, 120, and *Garrett*, II., 289.

honor. Then in rage she jumped into the *kund* (or excavation in which the sacred fire was placed) and was burned up. Siva, who was seated on Kailās, rushed in wrath to the place and destroyed Daksha and all that he found there, and he took the ashes from the fire where his wife had perished and smeared them over his body and went to Tankara,¹ the mountain of Jageswar, covered with all beautiful plants and *deodār* trees (*Cedrus deodara*), and began there to perform great austerities in order to propitiate the eternal Brahm. Vasishtha and many other Munis and their wives lived on this mountain. One day the women were walking through the jungles plucking *kusha* grass and sticks;² and they saw him smeared with ashes, wearing a snake as a necklace round his neck, sitting with closed eyes and speechless, and his heart heaving with sorrow. The women wondering at his beauty collected round him. The Rishis when their wives did not return were greatly alarmed, and when their wives did not come back all night they went to search for them and found Mahádeo seated as before motionless and their wives senseless on the earth all round. The Rishis, believing that they had been brought there by Siva, began to abuse the god and said—"Let the thing with which you have done this injury (*i.e.*, your *ling*) fall upon the earth." Then Siva said—"You have cursed me without cause; yet shall it not be said that you have beheld me without advantage, though by your curse, which I shall not oppose, my *ling* shall fall. You shall become the seven stars³ in the constellation *Saptrikhi*, under the rule of Vaivaswata Manu, and shall shine in the heavens." Then Siva in obedience to the curse of the sages flung down his *ling* upon the earth; the whole earth was covered with the *ling*, and all the gods and the Gandharvas came to glorify Mahádeva, and they called the *ling* Yagisa⁴ or Yagiswar, and the Rishis became the stars of the *Saptrikhi*.

¹The hill on which the old temple of Jageswar stands in Patti Dárdn.

²For their husbands' use in performing sacred rites.

³Ursa Major or the pole-star, *dhruva*; see Wilson, VI., 174.

⁴Because the women were collecting grass and wood for the *yaga* or sacrifice. The legend of the amours of Mahádeo with the wives of the Rishis belongs to the Agni form of Siva, and we find in the Mahábhárata that Agni is made the hero of the tale. Sváha taking the form of the wives of the Rishis, satisfied Agni and from the deity a son was born, called Skanda, from the seed discharged (*akansa*) and collected in a golden reservoir by Sváha and called Kárttikeya, because he was brought up amongst the Krittikas, who lived on Kailās and who are possibly one with the Krittikas of Kashmir, where this cult had its origin. He has six heads and other members and but one stomach, in allusion to his birth. Urundhati, the wife of Vasishtha, the seventh Rishi, took no part in the matter: see Muir, IV., 224, 224.

There is no place¹ in the universe where Siva is not ; therefore doubt not, O Rishis, that the *ling* of Siva could overshadow the world. Then Vishnu, Brahma, Indra, the sun and the moon, who were then at Jageswar worshipping Mahádeva, left each a portion of his own self (*i. e.*, power and instructions) at Jageswar. Then the cow Prithivi came to Siva and said—" I am burdened with thy *ling* and cannot move it ; lift me up and deliver me therefrom." The gods then set out to examine how far the *ling* extended : they reached the serpent Ananta and still there was the *ling* ; then they returned, and Prithivi asked—" How far does the *ling* extend ? " Brahma answered—" I have seen its end : it extends to the end of you (*i. e.* of the world.)" Then Prithivi said—" You, a great god, have lied: henceforth in the world none shall worship you." Brahma answered—" You too, when the last *yug* shall come, shall be filled with Mlechchhas."² Then she asked the other gods if they had seen the end of Mahádeva's *ling* ; they answered—" Brahma, Vishnu and Kapila do not know ; what power have we to know ? " She then asked Vishnu; he went to Pátála to search, but still did not find the end. Here the gods said to Vishnu—" We cannot find the end; yet the *ling* must be removed from the earth or the world will perish." Then Vishnu prayed Siva to grant him a request. Siva agreed, and Vishnu said—" The earth is weary of thy *ling* ; lift it up from her;" and Siva answered—" Cut up the *ling* with thy *chakra* into pieces and set up everywhere the fragments for worship, and there too in each place leave a part of yourselves for worship." Then Vishnu cut up the *ling* into many pieces and throughout the world the fragments were left for worship. Thus was the earth rejoiced with the establishment everywhere of the *ling* of Mahádeva throughout the nine divisions (*khandas*) of the earth.

The Pandas of Jageswar have the same story, except that they make the seven wives of the Rishis enamoured with Mahádeo. They met him in the forests whilst nude, performing the celebrated dance which he invented for the gratification of Párvati and accompanied by the music of the tabor. In consequence of the curse of the Rishis, the *ling* fell on the earth, and Vishnu at length consented to become the receptacle or *yoni*, and cutting up the *ling* distributed it over the twelve great *lingas* temples of India, whilst the smaller fragments are preserved at Jageswar. Numerous legends are told to inculcate the value of a pilgrimage to Jageswar, and even Vishnu is brought in and made to describe its extent, rivers, and forests from the marks on the palm of his hand. It is said to be 144 square miles in extent, being bounded on the east by Jageswar; on the north by Ganamáth; on the west by Trinetra, and on the south by Rámeswar. The ridge called Iswardhár is supposed to be the scene of the dalliance with the wives of the Rishis. ¹ Spoken by Vyasa to the Rishis. ² This would point to a post-Mussalman period for this occupation.

The nine Khandas.

Four of these *khandas* are situate in Himáchal. The first is the Himádri-khanda. Káli, who had been burnt¹ at Kankhala, was born again as Párvati, the daughter of Himáchal, and was again married to Mahádeva. The second is Mánasa-khanda named after Mánasa-sarovara, the first created of all *árthas* made by Brahma. The third is Kailás-khanda, named from Kailás, where Siva himself with all his servants reside. The fourth is Kedára-khanda around Kedár, on seeing which the five Pándavas were cleared from the guilt of patricide. The fifth is Pátála-khanda, where the Núgas worship the *ling*. The sixth is Káshi-khanda, where is the great *ling* called Visveswara, where everything that perishes finds salvation (*mukti*). The seventh is Rewa-khanda, in which is the Rewa river, and whoever bathes in it finds deliverance and its stones are known as Narmadeswara. In this khanda is the *ling* called Rámeswara. The eighth is Brahmot-tara-khanda, where is the Gokarneswara *linga*.² The ninth is the Nagar-khanda, from hearing of which souls are received into the paradise of Siva. In this *khanda* is Ujjayini.

Birth of Uma or Párvati.

Then Janamejaya addressed the Síta and said—‘How did Káli after her cremation become Párvati?’ The Síta replied—‘Himáchal and his wife Mena performed great austerities and prayed for children. Brahma and the other gods asked—‘Why do you mortify yourselves so?’ Mena replied—‘Give me such a child as will do honour to all of you.’ The gods approved and disappeared, and in answer to Mena’s prayer Párvati was born. Párvati worshipped Siva and is also known as Uma, Gauri, Durga, Kálika, and Bhadra. At this time the Daityas expelled the gods from paradise. The gods then went to Brahma and represented their case and said—“The Daitya called Tárakásura³ has conquered us: expel him again from Swarga.” Brahma answered—‘In return

¹ The *Kámas Purána* relates how Seti, daughter of Daksha and wife of Siva, voluntarily suffered cremation, and was afterwards born again as the daughter of Himáchal by Mena, and in that character as the only Káli or Uma, again became the wife of Siva as Bhava and is hence called Bhávaní. The story is also given in *Mádhava’s Kumára Sambhava*; *Mair*, IV. 205, 450. ² In the *Samaga* district of the Bombay Presidency. ³ The Daitya Táraká, son of Himsaráshta, the son of the Bháhi Kanyas, and Diti, daughter of Daksha, Párvatí or Bura, the goddess of wine, was slain by the gods and rejected by the Daityas; hence the former are called Suras and the latter Asuras.

for his devotions, I promised this Daitya that he should not die even by the hand¹ of Vishnu, but I will tell you how to act. Go to Siva, who is seated with his mind intently fixed on one object, disturb his contemplation; then he will marry Párvati, and from her a son shall be born who shall destroy the demon Táraká. Then Indra placing Kámadeva before them went to Siva and began to glorify him; then Mahádeo opening his eyes saw Kámadeva before him, and with rage fire issued from his body and burned up Kámadeva.² Then the gods began to glorify Mahádeva, and he asked them what they desired. They told him that they wished that he should beget a son on Párvati to slay the demon Táraká. Mahádeo agreed and told Brahma to go to Himáchal and ask his daughter in marriage. He went and told Himáchal that Párvati was Káli and asked for her for Mahádeo. Himáchal consented and Brahma returned to tell Siva to make his preparations for the marriage. Siva said—'Call Viswakarma, the workman of the gods.' Viswakarma came and prepared all that was wanted and made a golden image of Ganesha, which he told Siva to adore, for it was from a neglect of Ganesha that Káli had been destroyed. Then Brahma said—'If Kámadeva shall perish, the world will end for want of children;' and Mahádeo said—'Henceforth Kámadeva shall live in the minds of all men; he need not again take a bodily shape.'" Then Mahádeva smeared his body with ashes and throw over his shoulders the skin of a deer and adorned himself with snakes instead of jewels, and took the *tristula* in his hand and wearing a necklace of dead men's skulls and seated on a bull, he went off to the marriage. Stopping on the south bank of the Gomati,³ he worshipped Ganesha, and thence went to the confluence of the Gomati and Garuri,⁴ where he sat down and told Brahma to announce the arrival of the marriage procession to Himáchal. Brahma did as he was ordered and delivered presents to Himáchal, who came out to meet Mahádeva and took him to his dwelling, where he gave to Mahádeva his daughter and all the gods and Gandharvas and Apsaras, and others glorified Mahádeva. Then

¹ See Muir, IV., 324. ² Said to have taken place at the confluence of the Sarju and the Ganges. See Wheeler, II., 41, and Muir, IV., 364.
³ The Gomati rises in the Katyár valley and joins the Sarju at Bégawar.
⁴ Now called Garur-Ganga. This confluence is a little below Baljnáth and the place where Siva sat down on the grass was called Baidyanáth from the herbs on which he sat becoming good for medicine. Triyogi-Narayan is also claimed as the site of the wedding of Siva and Párvati by the Garhwáls.

Himáchal, after he had distributed gifts and done due honor to the companions of Siva, received as a gift that he should henceforth be honored like Siva himself throughout the universe. Then Brahma and the other gods went back to their respective dwellings, and Siva and Párvati and their attendants went to Kedára-mandal (or circle of Kedár).

Legend of Himáchal.

Janamejaya then addressed the Śúta and said—‘ You have told me the history of Siva, now tell me the *máhátmya* of Himáchal.’ The Śúta replied as follows in the words of Vyása :—‘ Himáchal is the giver of the four gifts,¹ *dharm, artha, káma, moksha*. Mahádeva always resides in Himachal and on him attend the gods ; and in him are many caves and much ice. The *máhátmyas* of Himáchal were related by Dattátreya Rishi² to Káshi rája.³ Once this Rishi went from Shesháchal⁴ to behold Himáchal. He saw upon him many lakes, and *bhojpatra*⁵ and other trees and mines of gold and other metals, and tigers and deer and every species of birds, and wild men, and medicinal plants. When Himáchal saw Dattátreya approach, he bowed in reverence before him and after doing him all due honor, he asked the sage why he had come to visit him. Dattátreya said—‘ Thou art the greatest of mountains and the Ganga and the other holy streams flow from thee and Siva resides in thee, and on thee fell the *ling* of Siva and his wife is your daughter ; thou art like a god. Vindhyáchal⁶ and the other mountains join their hands before thee, therefore have I come to behold thee ; now show to me thy *tirthas* and the *ling* of Mahádeva and thy caves and thy mines of precious metals.’ Then Himáchal showed Dattátreya Mána-sarovara, and in the midst a golden *ling* and the *rája-hansa*.⁷ Then Dattátreya went all round the sacred lake and bathed in its waters and in that of its streams ; then he saw Siva seated in a cave with Párvati and before him was Brahma and the gods glorifying him and the Gandharvas singing and the Apsaras dancing. Then he saw Ganga which descends from the foot of Vishnu to Kailása, and thence to Mána-sarovara, in which he bathed. Then he saw the

¹ Virtue, wealth, desire, absorption or death. ² One of the seven human incarnations of Vishnu. ³ Son of Káshi and descendant of Ayas, eldest son of Parurava. ⁴ Abn. ⁵ *Batala Bhojpatra*. ⁶ See legend of Agastya, *poetas*. ⁷ Royal goose with red legs and bill. Great grey goose called Mánasankar or dweller in Mána. Wilson, XL, 90.

Brahmkapál and the *Saptrikhi* who dwell there. Then he went to Kailás, where he again found Siva and Párvati, and the gods, and he worshipped Siva, who said—' Ask what you desire.' He asked that the power to go through the world when he pleased without obstruction might be given to him, and Siva granted the prayer. Then he asked of Siva—' Which is the greatest of mountains and where do you live yourself, and in the earth which is the most sacred place ?' Then Siva answered—' I dwell everywhere, but Himáchal is my peculiar seat, and on every one of his peaks I dwell for ever and on the mountain of Nanda¹ dwells Vishnu, and I and Brahma also. There is no other mountain like Himáchal ; look upon him and receive whatever you desire.' Then Dattátreya glorifying Mahádeva departed to the north, where he saw a lake filled with the juice of the *jáman*² and other lakes and temples of Siva and Vishnu, where the Gandharvas were singing and the Apsaras dancing. Thence he turned back to Kedár,³ where he saw many holy Rishis in caves, performing austerities and the river Mandákini ;⁴ then he came to the mountains of Nar-Naráyana⁵ and worshipped at Badrináth, and he saw Lakshmi and Nárada and the other sages and the Alaknanda.⁶

Dattátreya and the Rája of Káshi.

Dattátreya again visited Himáchal and taking leave went to Káshi⁷ and proclaimed the glories of Himáchal to the Rája Dhanwantari.⁸ Then the Rája said—' In the earth which is the greatest of *úrthas* and what *úrthas* have you beheld ?' Dattátreya answered and said—' You are the greatest of rajas and there is no *úrtha* like Káshi, where you live. He who even without going to Káshi desires to see it and dies with the name of Káshi in his mouth finds release, for there is Ganga and Visveswara. In the three spheres there is no *úrtha* like this.' The Rája answered and said—' This is true, but tell me also of the other *úrthas* which bring blessings on mankind. I have heard that formerly rajas went to Swarga with their bodies, by what road did they go ?' Then the sage said—' He who thinks on Himáchal, though he should not behold him, is greater

¹ Nanda Devi. The temple is situated.

² *E. jambolana.*

³ Mountain on which the

⁴ A river in pargana Nágpur in Garhwát which rises in the Kedár glacier.

⁵ One of the Badrináth peaks: see page

⁶ The eastern branch of the Ganges which rises in the Niti valley.

⁷ Benares.

⁸ Grandson of Kibirá and produced from the chaturáse of the ocean. Wilk. cat. IX. 3.

than he who performs all worship in Káshi, and he who thinks of Himáchal shall have pardon for all sins and all things that die on Himáchal, and all beings that in dying think of his snows are freed from sin. In a hundred ages of the gods I could not tell thee of the glories of Himáchal. This was the road the rāja took to heaven, where he went with his body. That Himáchal where Siva lived and where Ganga falls from the foot of Vishnu like the slender thread of a lotus flower and where the Rishis worship and where the Siva *lingas* are numerous. I behold Mána-sarovara and there in the form of the *rāja-hansa* dwells Siva. This lake was formed from the mind of Brahma, therefore was it called 'Mánasa-sarovara.' There dwell also Mahádeva and the gods, thence flow the Sarju¹ and other (female) rivers and the Satadru² and other (male) rivers. When the earth of Mána-sarovara touches anyone's body or when anyone bathes therein, he shall go to the paradise of Brahma, and he who drinks its waters shall go to the heaven of Siva and shall be released from the sins of a hundred births, and even the beast who bears the name of Mána-sarovara shall go to the paradise of Brahma. Its waters are like pearls. There is no mountain like Himáchal, for in it are Kailás³ and Mána-sarovara. As the dew is dried up by the morning sun, so are the sins of mankind dried up at the sight of Himáchal. At Mána-sarovara, the king,

¹ The Kumaon Sarju rises at the foot of Nanda Davi, but this may refer to the Karnáli, the longest branch of the Sarju of the plains and which rises close to Mána-sarovara. ² The Satlaj, which rises in the Rákas lake, which is itself connected with the Mána lake. ³ The following description of Kailás as seen from the pilgrim route is interesting :—'On the approach to the lake,' writes an observant traveller, 'the Gángri range continued far to the eastward, rising out of a wide green plain. This extended between the base of the mountains, and the northern shore of both lakes (Rákas and Mána) being visible from this as far as the low hills on the north-western corner of Mána-sarovar. The most remarkable object here was Kailás, now revealed in full proportion to its very base, rising opposite (northward) straight out of the plain only two or three miles distant. The south-west front of Kailás is in a line with the adjacent range, but separated on either side by a deep ravine; the base of the mass thus isolated is two or three miles in length perhaps; the general height of it is about 4,250 above the plain, but from the west end the peak rises some 1,500 feet higher, in a cone or dome rather of paraboloidal shape. The peak and upper ridge were well covered with snow. The stratification of the rock is strongly marked in successive ledges that catch the snow falling from above, forming irregular bands of alternate white and purple. One of these bands more marked than the rest encircles the base of the peak, and this, according to Hindu tradition, is the mark of the cable with which the Rákahasa attempted to drag the throne of Siva from its place' * * * 'In picturesque beauty Kailás far surpasses the great Gur-la or any other of the Indian Himálaya that I have seen: it is full of majesty, a king of mountains.' Through the ravines on either side of the mountains is the passage by which the pilgrims make the circumambulation. The circuit⁴ is performed in two days by those who take it easily, but with more exertion it may be done in one day.

Bhagiratha,¹ performed the austerities by which the holy Ganga was produced and Vasishtha obtained the Sarju. The country around this holy lake is called *Mánasa-khanda*.

The creation of Mána-sarovara.

The sons of Brahma, Maríchi and Vasishtha and the rest proceeded to the north of Himáchal and performed austerities on Kailása. There they saw Siva and Párvati, and there they remained for twelve years absorbed in mortification and prayer. There was then very little rain and little water, and in their distress they went to Brahma and worshipped him. Then Brahma asked what their desire might be. The Rishis answered and said—'We are engaged in devotion on Kailása and must always go thence to bathe in the Mandákini; make a place for us to bathe in.' Then Brahma by a mental effort formed the holy lake of Mánasa. The Rishis returned and rejoicing at the success of their journey again engaged in mortification and prayer on Kailása and worshipped the golden *ling* which rose from the midst of the waters of the lake.

Story of Mándhatri.

The rája then said—'The journey to Himáchal is a very difficult undertaking for man; who was it prescribed the necessity of making a pilgrimage to him?' Then Dattátreya said—'From Vaivaswata was descended the Rája Mándhatri,² and one night the earth, in the shape of a woman, came to the rája and said to him—'In the world I have not seen a man so beautiful as you, therefore I come to you.' Mándhatri said—'Art thou the daughter of a god or a Dánava, or an Apsara, that thou art so beautiful?' She said—'I am the earth who have come to thee seeing thy beauty. I have left all other rájas.' He said—'I have sworn to have only one woman to wife, therefore charm some other of the kings of the earth.' She said—'All the former rájas who were my masters have ascended in old age to Swarga, but I remain still a young maiden. I will have thee for my husband.' He said—'If I die, my wife must burn on my death as Sati; how shall the earth, who does not die or grow old, take me, who am a mortal, for her lord?' She said—'When I too become old, I will burn with you as Sati.' Then Mándhatri married the earth and

¹ To precipitate Siva, so that Ganga might descend from heaven and purify the ashes of the sons of Sagara. Muir, IV., 245. ² Wilson, VIII., 367: another of the human incarnations of Vishnu.

lived in happiness. When he became old he said—“ Let me go into the forests and engage in prayer and mortification. Then dying together we will go to Swarga and live together.” Then the earth laughed and said—‘ I am young, how shall I go with you ? when I become old then I will die with you.’ Then Mándhatri was enraged and drew his sword to kill the earth, and she fled towards Himáchal and the ríja followed her, and she reached Mána-sarowara. Then on the banks of this lake the ríja cut off her head, but the earth could not perish and vanishing in the waters went down to Pátála, where she worshipped the gods who were seated on Kailása.

Route to Mána by Barmdeo.

The ríja next inquired ‘ Which is the road to the holy lake ?’ Dattatreya answered and said—The pilgrim must go by the road of Kúrmáchal¹ ; he must first bathe in the Gandaki² and then in the Loha,³ and let him then worship Mahádeva and the other gods. Then let him worship on the top of Kúrmá-sila⁴ and bathe in the Hansa-tírtha,⁵ thence let him go to the Sarju, then to Dárún or Tankara,⁶ and worship Mahádeva, thence to Pátála Bhubaneswara,⁷ and then without eating for three days let him worship Siva. Then let him bathe in the Rúnganga and worship at Baleswar. Thence to Pában⁸ mountain and worship Siva, thence to Patáka⁹ and worship Siva, and he should then bathe at the confluence of the Káli and Gori.¹⁰ Thence to Chaturdaunshtra¹¹ mount and worship Siva there. Then to Vyásárama and worship Vyása¹² and then to the source of the Káli, then to Kerala¹³ mount and worship Debi ; thence to Puloman¹⁴ mount, where there is a lake ; thence to the mount of Táraka¹⁵ and let him bathe in the Tárani and Sárda (or Káli), where

¹ The old name of Kumaon on the Káli, now applied to a hill near Champawat in Patti Cháril, surmounted by a temple to Ghatku and fabled as the spot where Vishnu descended in his tortoise avatar to save the earth. ² The Gidhiya river in Káli Kumaon.

³ The Lohaghát river in Káli Kumaon. ⁴ Kána-deo, a hill in the eastern Gágar range near Chhírapáni in Patti Cháril and surmounted by a temple sacred to Mahádeo. ⁵ A stream and waterfall on Kána-deo.

⁶ The hill on which the Jageswar temple is situate in Patti Dárún. ⁷ A temple and cave in Patti Baraun of parganah Gangoli north of Gangoli Háit Dák Bungalow. ⁸ The mountain in Patti Máli and parganah Síra above the temple of the Thal Baleswar.

⁹ The Dhvaj peak in Patti Kharáyat to the north of Pithoragarh. ¹⁰ Near Askot. ¹¹ Patti Chandána.

¹² Patti Byána is sacred to Byána Ríki, the Vyása of the Puranas, who is supposed to reside on the Kalirong peak near Changru in Byána. ¹³ Also in Byána and called Chhechhala.

¹⁴ A peak in the dividing range between Dárma and Byána, at the foot of which is a small lake known as Mán talá or Byankshiti between the Jhúling and the Sérub Yaukti. ¹⁵ The Táraka-dhára or pass into Tibet.

they join. Then let him behold the caves and worship the gods and let him cut his beard and fast and perform the *Sreddha* ceremonies.¹ Then to Gauri² mount and then descending to Mana-sarovara; let him bathe there and give water to the *manes* of his ancestors and worship Mahádeva in the name of the *rája-hansa*. Then let him make the *parikrama* (circumambulation) of the holy lake Mána and look on Kailása and bathe in all the rivers around.

The return journey.

Then the Rája asked—‘By what way do you return from the lake Mána?’ The sage replied—‘Pilgrims must first go to Ráwan-hrad³ and bathe and worship Siva; then let him worship at the source of the Sarju;⁴ then to Kechara-tírtha;⁵ thence to Brahm-kapál;⁶ thence to Ohhaya-kshetra and worship Mahádeva; thence to Rámasera and bathe there; thence to Binmochana and Brahma-sarovara, thence to Sivakshetra and thence to the mount of Nanda; thence to Baidyanáth, thence to Málíka,⁷ where let him worship Devi and bathe in the Bridhagang. Thence to Jwála-tírtha,⁸ where he should worship the sacred fire and bathe in the Padmávati. Thus is the pilgrimage completed.

Mána-sarovara.

On the south of the Mána lake is the mountain Sambhu,⁹ from which issues the river Shesti, which flows to the north into Mána, near which are mines of silver and lead: near this the sands are red and the waters white. To the north is the Nála mountain,¹⁰ whence issues the river Kapila, which flows into Mána-sarovara, while to the south is a cave and a gold mine. From the Nála mountain, a river,

¹ Rites in honor of ancestors to be performed on occasions of rejoicing: see further Wilson's Works, VIII., 146-198.

² Probably may be identified with Dolma La a ridge behind Gur La or Mándhátagiri, the great peak to the south of Mána-sarovara on which is a small pool called by the pilgrims Gauri-kund.

³ The lake to the west of Mána-sarovara, also called Bákas Tál. ⁴ As already noted, this probably refers to the Karnálí, a tributary of the Kálí, Sárí or Ghagra which rises beyond the snowy range in Hundea. The river known as the Sarju in Kumaon rises to the south of the snowy range and its eastern branch or the Kálí also rises in the southern slopes of the snowy range.

⁵ Kechara-tírtha is on the Karnálí: it is now known as Kajar or Khojar-náth and is the site of a monastery.

⁶ The great rock in the river above Badrináth is called Brahm-kapál: this refers to a second one in Tibet as well as the succeeding terms which I have not been able to identify. Binmochana may be Gáringbocha or Gángri, on a ledge in the base of the Kailás peak, about the middle of the south side. It is called by the pilgrims Darchin and is one of the places which they are bound to visit. Brahma-sarovara is a synonym for Mána-sarovara, which was formed from the mind of Brahma. ⁷ Near Málí village. ⁸ Jwálamukhí.

⁹ This must refer to Gur-La, from which several streams flow into Mána-sarovara. ¹⁰ This also must be a peak of the Kailás range, from which two flow into Mána-sarovara near Sarnah-Uniah.

called Pushpabhadrā, flows to the east into Māna-sarovara and also the Devabhadrā. Here Rāmachandra propitiated Mahādeva,¹ and from this went to Swarga, leaving his horses and elephants, which still remain there. Near this flows the Chandrabhāgā² from the head of Siva on Kailāsa. From the mountain Gauri flows the Sārda³ into the Māna lake. From Kailāsa flows the Mandākini or Bhadrā to the south into the lake.⁴ West of this river are five lakes,⁵ *Kāli-hrad*, *Kan-hrad*, *Padma-hrad*, *Kāli-hrad* and *Hari-hrad*. To the left of Kailāsa is the Kalāpa peak, where are many caves and mines of gold and silver; from it flows the river Sonanda, of which the water is the color of gold; this flows into the Māna lake.⁶ Near Kalāpa is mount Meru; this mountain is blue and from it falls the Saraswati and Suvarna-dhāra, which also flow into Māna-sarovara.⁷ Beyond these is the Mahendra mountain, from which flows the river Mahendri into Māna-sarovara; from it also flows the river Baruni with yellow waters into the lake and the Swati.⁸

Mountains.

Now hear me, in reply to your inquiries, detail for your information the names of the mountains and rivers. The first of all is

¹ The Mahābhārata records that it was on the Gandhamādana mountain that Rāma propitiated Siva and obtained from him his weapons and among them the axe (*parasu*), whence his name Parasurāma or "Rāma of the axe." The Gandhamādana peak is above Badrināth.

² The Chandrabhāgā is the Chīnāb or Sandabilis or Akcsines of Ptolemy known, as the Askni in Valdik times: it rises however in Lahōl and the term in the text properly applies to the Satadru or Satlaj. ³ This is correct if the Karnālī is intended.

⁴ Besides the two streams at Sarniah-Uñiah already noticed, the Pandit makes the Som-chu flow into the lake from the Kailās range on the north. ⁵ East of Māna-sarovara is the Gunkyut-cho; to the north, the Gorgel-cho; to the west, the Cho Lagan or Rāwan Hrad, and further west near Gyānima the Tara-cho.

⁶ Four streams flow from Kailās into Cho Lagan: the Barka-cho, the Jong-cho, the Sār-cho or golden stream (or Sonanda), and the Kalāpa-cho or Kalāpa river. The two latter join the lake near its outlet which forms the source of the Satlaj.

⁷ Lieutenant Henry Strachey, who visited the lake, writes:—"The permanent affluents of Māpān are three or four. First a stream rising in two branches from the Gāngri mountains and falling into the lake at the eastern quarter of its north side; the second, also from the Gāngri range, a few miles further east, entering the lake at the north-east corner: at the very same point is the mouth of the third stream which rises in Hortol. The fourth affluent is doubtful: a stream possibly comes from the Nepāl Himālaya into the south-east corner of the lake. In the summer season there are many temporary streams from rain and melted snow" (J. A. S. Ben).

⁸ Here follows an account of numerous places of pilgrimage on the lake, chiefly Siva legends and legends connected with them and in honor of the sacred lake. The lake is about 45 miles in circumference and it takes four to six days to perform the journey and worship at the different shrines. There are eight principal stations known locally as (1) Tokar, on the middle of the south side; (2) Guesar, at the southern quarter of the east end; (3) Ju, at the northern quarter of the east end; (4) Jakyah, at the western quarter of the north side; (5) Langduna, at the middle of the north side; (6) Dwañi, at the north-east corner; (7) Sārāng, at the middle of the east end; and (8) Mupukur, at the south-east corner.

Nanda, where dwells Nanda Devi. Then comes Drona (Dunagiri near Dwára) ; then Dárúkavana (Jageswar) and then Kurmachal (Kánadeo in Káli Kumaun), beyond which the Mánasa-khanda ends. Then comes Nágpura; then Dárún (in Gangoli); then Pátana (above Baloswar in Síra) ; then Panchsára (Panch-chúli) ; then Ketumána (a ridge in Goriphát) ; then Mallík-Arjun (in Askot) ; then Gananátha (in Byáns), &c., &c.

Legend of Nanda Devi.

On the peak of Nanda is a lake and there is the abode of Vishnu and Vishnu himself. From Nanda flows the Pindaraka¹ from the hair of Mahádeva into the Vishnuganga.² In it meet the Káli³ and Saraswati⁴, Kámathi, Vaindhya, and Bodhini.⁵ The Brishchiki and Krikalási also flow from Nanda. The Pindaraka joins the Vishnuganga at Karnaprayága, where the king Karna worshipped the sun and received from him whatever he desired, gold and jewels and wealth, and he founded the *ling* of Karneswara Mahádeva.⁶ South of Karnaprayága is the mount Vaindhya, five peaked, with beautiful trees and many mines. To the west of this the Dáraka-peak,⁷ from which flows the river Chandra into the Pindar. Beyond this is the hill of Durhiddhya and the Pánda. Then Benu,⁸ a great mountain with great caves and mines and stones of white crystal. On its peak is the Churesa-linga.

The western Rám-ganga.

The Rathabálini⁹ possesses the seventh part of the virtues of Ganga ; its sands are golden and in it are many fish and tortoises.

¹ Pindar river.

² The Alaknanda, so called from the confluence at Vishnuprayág.

³ Kailganga.

⁴ Sundardhúnga.

⁵ Flows from

the Vaindhya hills, which from the subsequent description I would identify with the peaks in the watershed between the Pindar and western Rám-ganga above Lohba, where there are mines. There are several rivers flowing from this range into the Pindar, and I would assign the name Vaindhya to the Agar-gár.

⁶ Karna is one of the characters in the Mahábhárate and the temple at Karnaprayág dates from Katyúra times.

⁷ The peak above Darkot now known as Santholi; the Chandpur river flows by its eastern base and joins the Pindar at Simli.

⁸ The Durhiddhya and Pánda peaks will be the Dhobri and Pandubri peaks on the Dhanpur boundary and the Benu, the Ben peak above Adbadri and near Beni Táli.

⁹ The western Rám-ganga: Wilford identifies the Pauránik Váma or Sváma, 'the beautiful river,' with the Rám-ganga. It is also called Saráwati, 'full of reeds,' and Bána-ganga because Kárttikoya was born in a thicket of reeds on its banks at a place called Saraban, 'reed-forest.' The *Saccaarum Sara* still grows on its banks (*Ges.*, X., 807). In the *Amaru-kośa*, the Rám-ganga is called the Sausami (= Su-sami) in the country of Usára. The word is introduced on account of its referring to a town called Kantha known as Su-sami Kantha; but if this be Kanth-o-golah, the old name for Shahjahanpur, then the term Sausami will not apply to the Rám-ganga.

He who bathes in it shall be cleansed of the sins of a hundred births. In a hundred years the *irthas* cannot be told. The Saraswati is the first to join the Rathabáhini and the Gotami and Sakati and Sara¹ and the Beláli² which flow from Drona. On the left of the Rathabáhini is the Nágárjun,³ where the serpent Arjun is worshipped. To the right of this is the mount Asura,⁴ where Káli is worshipped, and to the right of Nágárjun is the Siva-ling of Bibhandeswar,⁵ which is the right hand of Mahádeva. After Mahádeva had been married to Párvati, he demanded from Himáchal a place to sleep in ; and he rested his head on the head of Himáchal and his back on Níla and his right hand on Nágárjun and his left hand on Bhubaneswar (in Gangoli) and his two feet on Dárúkavana (*i.e.*, the jungles of Dárún near Jageswar). This is the most glorious of *irthas*. The river of Bibhandeswar is called Surabhi,⁶ for Kámadhenu, the cow of the gods, by the order of Brahma, took the form of this river. The Nandini and Saraswati join the Surabhi and flow into the Rám-ganga.⁷ At this *sangam* (confluence) is the Senasanavasi Siva-ling.

Dunagiri.

From the great hill of Drona flows the Druni⁸ into the Rám-ganga. Above Drona is the mount of Brahma, whence flows the Gárgi,⁹ at the source of which the Rishi Garga made his devotions. To this mount came Duhsásana the Kaurava and conquered the rája of the mountains and bathed at the junction of the Satradhára and Sukávati, and there he established the Siva-ling of Duhsásaneswara.¹⁰ Dronáchal has two heads and two feet : one head is called Lodhra, the other Brahma, and between them is the source of the Gárgi. Here at the source of the Gárgi is the Gargeswara Siva-ling. Into the Gárgi flow the Bilwávati and Betrávati and Bhadrávati and then the Sukávati ; then join the Sailávati, and the

¹ Streams of the Lohba valley.

² Drona is Dunagiri and the Betáli

may be either the Kham-gadh, which flows from near Dwára to the Rám-ganga, or the stream issuing from Tarág Tái.

³ The Nágárjun, or as it is commonly

called Nangárjun temple, is in Patti Dora Malla on the ridge between Dwára and Naithána at the source of the Baluwa-gadh ; a Saiva temple according to the Khadiya.

⁴ The hill above Páli in Dora Talia, where there are temples to Káli and Naithána Devi.

⁵ The temple of the Bibhandeswar Mahádeo is situated near Rana in Dora Malla.

⁶ In Gangoli.

⁷ The Surabhi must

be the Biskui or Kiskan, which flows past the temple, but it joins the Gágá near Sbania : the geography here gets confused and unintelligible. At Sainana in Nayán there is a temple to Siva. Bri ddkodár is mentioned.

⁸ The river from

Bairai beyond Dwára.

⁹ Gágá, which rises between the Sukhaldevi and

Debara peaks.

¹⁰ Now called Sakáswar, near Bánauli-sera in Patti Athá-

guit.

Gárigi joins the Rám-ganga.¹ At the confluence is the Siva-ling of Chakreswara.² To the left is the mount of Báraba. The mount of Drona is between the Rathabáhini and Kausiki.³ There are many caves and many beautiful trees and flowers and tigers and deer and great creepers and the *Aukhadi*, the plant which shines at night like the diamond and laughs at mankind who know not its value, and on the mount lives Drona. Kálíka and Bahnimati and Mahishamurdani are worshipped there. Between the Sálmalí⁴ and Kausiki is the mount Bidrona⁵ and near it is the Siva-ling of Pinákisa,⁶ a great *tírtha*.

The Kosi.

There was a Rishi called Kusika who adoring Ganga raised his hands to heaven, and into them fell the river Kausika and thence to earth. Brahma sat on the Lodhra peak⁷ and poured forth from a vessel the river Sálmalí. Where the Sálmalí and Kausiki meet is the *tírtha* of Phálguna,⁸ and here is the Someswar Mahádeo where to worship is equal to worship in Káshi and near it dwells the serpent Takshaka.⁹ Above is the *tírtha* of ChandraSekhara¹⁰ and the confluence of the Godávári¹¹ and near it is Mallika Devi.¹² Above, in the Kausiki, are two great rocks, Kausi-sila and Baudri-sila, and above them is Brahm-kapáta and Kápila *tírtha* and Dharma-sila and above them is Pinákisa Mahádeo. To the left of the Kosi is the mount Kásháya¹³ and on the right is the dwelling of Baráditya¹⁴ further on joins in the Rambha.¹⁵ Beyond Baráditya is Katyáyani Devi¹⁶ also called Syáma Devi. From Tankara¹⁷ flows the Sháli¹⁸ to the Kosi; afterwards the Kausiki breaking through the mount of Sessa flows into Madhyadesa (the plains). The mount Sessa is on the left of the Kausiki. Gandharvas live in its caves and great trees and deer and tigers; on it dwells Seshnága¹⁹ and from it flows the Síta to the Kausiki southwards. Between the Síta and the Kausiki is Asokabanika, the grove of *Asoka* trees where the seven Rishis and the

¹ The affluents of the Gágá on the right bank are the Chaudás, Baláru, Biskan and Balwa, and on the left bank the Naurar. ² At Bikiya-ka-Sain: Naulless temple.

³ Kosi river. ⁴ River from Lodra, which joins the Kosi at Someswar. ⁵ Now Bidhon. ⁶ Pináth. ⁷ Bhadrkot.

⁸ Same name now, is close to Souriswar, where the burning ghát is situated. ⁹ Near Someswar is a village called Sarp and the great pool in the Kosi below is called Sarp-brad. ¹⁰ Retains the name. ¹¹ Retains the name. ¹² A large rock in the river. ¹³ Kalmatiya hill near Almora, the peak of which is still called Kashár.

¹⁴ The temple of the sun at Katármal. ¹⁵ A small stream which rises below the Mission School at Almora. ¹⁶ Sijáhi Devi. ¹⁷ Jagowar. ¹⁸ Suál river. ¹⁹ There are several Nág temples here.

Satyavrata Rajas did penance. Here there are *Asokas* and other trees and many birds. Bámachandra and Sita and Lakshmana came here by the order of the Rishi Visvámitra. Síta was rejoiced at the beautiful forest and said to Ráma : " It is the month Baisákha ; let us stay in this wood and let us bathe in the waters of the Kau-siki." So they remained there during Baisákha in the forest and two springs burst forth for them. Thence they went back to Ayodhya, and from that time the name was changed to Sítabani.¹ He who beholds Sítabani can have no sorrow. Near is the river Devaki,² and to the right of mount Sesha is mount Gárga,³ in which are many caves and mines of metals and trees and birds and deer and Rishis and gods live there and from all sides flow down rivers.

The Lakes.

In this tract there are sixty-six lakes at which the sage Garga pays his devotions. Gargáchal is at the feet of Himáchal. On his summit is the Gárgeswar Siva-ling where dwells the sage Garga, and whence flows the Gárigi.⁴ On the left of the Gárigi is Blíma-sarovara,⁵ and west of these Trishi-sarovara⁶ which the three Rishis created. The three Rishis Atri, Pulastya, and Pulaha came to the *tirthas* of Himáchal, and from Chitra-sila⁷ ascended to the mount of Gárga. They were thirsty and found no water, then they dug into the mount and thought admiringly of Mána-sarovara and on this Mána-sarovara filled up the place, that they had dug, with his waters, and the place was called Trishi-sarovara. He who bathes in it shall derive the fruits of bathing in Mána-sarovara. Around Chitra-sila is the Bhadravata ; here is a great *bar* tree in a leaf of which Vishnu floated over the ocean. In Chitra-sila, Brahma, Vishnu, Siva and their Sáktis dwell and Indra and the other gods. Below the junction of the Gárigi and the Pushpabhadrá⁸ stood the *bar* tree in the shade of which Sutapa Brahma performed austerities for thirty-six years, eating dry leaves and his hands raised to heaven. Seeing him Brahma, Vishnu, Siva, and the other gods came and granted him all that he should desire, and sent for Visvakarma and on the banks of the Gárigi, Visvakarma with gold and

¹ In the Kota Dún where there are several groves of *Asoka* trees. ² Dabka river. ³ Gágar. ⁴ Gaula. ⁵ Bhim Tál. ⁶ Naini Tál, or 'lake of the three Kshias.' ⁷ Or 'painted rock' near Ránibágh. ⁸ The stream from Bhim Tál which joins the Naini Tál river at Mayapuri, where a fair takes place on Makar Sankranti.

other metals and jewels made the Chitra-sila (or variegated rock) and the virtues of all the gods entered into it, and they took away Sutapa to Vaikantha, the paradise of Vishnu, and he who worships at Chitra-sila and bathes in the Gúrugi shall follow him. To the east of Gargáchal are the seven lakes which are the holiest of all the lakes of Garga. The first is Trishi-sarovara, the second is Bhíma-sarovara, the third is Návakona-sarovara¹; the fourth is Nála-sarovara,² the fifth is Damayanti-sarovara³; the sixth is Rúma-sarovara⁴ and the seventh is Síta-hrada⁵. Bhíma-sarovara was made by Bhíma Sena, and on the banks of it he established the Bhímeswar Siva-ling, from it flows the river Pushpabhadra.

Bárahmandal-Bágeswar.

East of Kálmatiya is the mount of Swayambhu⁶ and beyond it is Tankara⁷ in which is Dárúkávana (*i.e.*, the forest of Deodárs in Dárún). To the south of Dárúkávana are the hills of Sálmalí⁸ in which are mines of iron and copper and gold, on Himáchal between Kailás and Manda the gods love to look. At the junction of the Sarju and the Gomati is the Níla mount⁹ on which live the gods and Siddhas and Gandharvas, and Apsaras. At the junction is Agni-tírtha,¹⁰ and above is the Surya-kund.¹¹ Between this Báránasi-Kshetra¹² created by Chandisa¹³ for the dwelling of Siva. Mahádeva and Párvati when it was ready came to the place, and when they reached it a voice from heaven (*akáshabáni*) glorified Mahádeva, who sat down at the junction of the rivers and Brahma and the other gods came there and they said, "the *akáshabáni* first called out the glories of Siva, therefore shall this place be called Búgiswar.¹⁴" The Rishi Galava¹⁵ said, 'Let him who wishes to be cleansed from all his sins bathe in the Sarju'. On the mount of Níla the Rishi Márkandeya performed austerities, and while he was there the Rishi Vasishtha

¹ Nankuchiya, 'the lake of the nine' *'kunchu'* or corner: if any one see all the nine bays at the same time he meets with some great fortune before the year is out.

² Náí Tál, one of the lakes comprising the Sít Tál. ³ Káni Damayanti ke Tál, another of the seven lakes. The two last names refer to the hero and heroine of the well-known episode in the Mahabharata, for a popular account of which see Wheeler's History of India. I. 480.

⁴ Kubúriya Tál, a small pool above Bhíma Tál. ⁵ Close to the Bám Tál, but now dry. ⁶ Sintois near Almora.

⁷ Jágeswar. ⁸ Sálam. ⁹ At Búgesar, the hill above which is now known as Kokru ka danda.

¹⁰ Now called Agni-kund. ¹¹ A pool in the Sarju above Búgesar. ¹² Now called Úttar-Báránasi, 'the Benares of the north.'

¹³ One of the servants of Siva. ¹⁴ 's', lord of speech' from Sans: 'Vát', 'speech' as in compound *Vát-pati*, 'lord of speech,' 'eloquent.'

¹⁵ A celebrated sage, the hero of the stories of the white horses with black ears, Wilson XI., 225.

brought down the Sarju from the north. When the Sarju saw Márkandeya, it stopped before him forming a lake, and when Vasishtha saw that by virtue of the austerities performed by Márkandeya the Sarju could not flow onwards, he went to Siva and prayed him to open the road for the river. Then Siva and Párvati, consulting together, contrived a plan by which Párvati became a cow and went to graze near Márkandeya. Siva became a tiger and sprang upon Párvati, and when Mankandeya saw this, he ran to save the cow and drive away the tiger. When the sage rose up from his devotions for this purpose the Sarju seeing himself free flowed onward, and when Párvati and Siva heard the waters flowing they resumed their proper forms. When Mankandeya saw them he began to glorify them and said to Siva, "Thy name is Byághreswara¹, 'the lord of tigers,'" then Siva and Párvati vanished and Márkandeya departed to the paradise of Brahma.

Dánpur.

In the beginning of the Satya-Yuga Brahma divided the earth into portions giving to each the share to which he was entitled. To the Nágas² he gave the country between Jiwafa³ and Dúru and this city was called Nágapura.⁴ The chief of the Nágas called Malla Náráyan⁵ said to the Rishis, "give us water, there is none here," and the Rishis called down the Bhadra Ganga from the mountains and gave it to the Nágas. The Nágas saw Kámadhenu, the cow of the gods, and asked her to give them cows and she gave them many beautiful cows and the Nágas built sheds (*goths*) for them and ordered their daughters to tend the cows. These Gopis (cow-tenders) saw Mahádeva and the place was called Gopeswara⁶ and the jungle was named Gopivana.⁷

The story of Pátála-bhubaneswara.

Between the Sarju and the (eastern) Ráunganga is the shrine of Pátála-bhubaneswara.⁸ The Rishis asked Vyása to tell them of

¹ From Sans. 'Vyághra,' 'a tiger.' ² The serpent race. ³ Juhár, the country between Milam and the Mái peak. ⁴ Nákuri now giving its name to a patti or fiscal sub-division in pargana Dánpur. A temple to the Nága still exists on the ridge above the village of Papoli. ⁵ Múlen, the name of the ridge above Saring, on the route to the Pindari glacier was the residence of this Nága chief who received the affix Náráyan as a title on account of his worship of Vishna. ⁶ A Sivá Linga of this name now. ⁷ Gopala. ⁸ Várukí the Nága chief is still worshipped at Gadyára, where a great festival takes place in Baisákh and Kártik. ⁹ The temple is situated in patti Baráun and pargana Gangoll.

Pátála, how does Mahádeva live there in darkness and how large is it, and who are those who worship Mahádeva there and who are the chief of the gods of Pátála, and who first discovered that there was such a place as Pátála, and how can men go there without the sun or moon ?' Vyása said—' As is the earth above so large is Pátála below, not even Vasishtha and the Munis can tell where is the end of Pátála, but can only penetrate to where Blubaneswara Mahádeva resides. Below this there are three caves called Smara, Smeru, and Swadhama, into which no sinful man can enter, and in the Káli-yug they will be shut up. I will tell you the story of how Pátála¹ was discovered by mankind. Rituparna² was a Suryavansi Rája of Ayodhya who left his kingdom and travelled north into the mountains with his soldiers and killed many deer and birds. There the Rája saw a great boar lying in a stream of water and attacked the animal with his sword, but the boar fled and the Rája pursued him until fatigued with the sun and thirst he looked about for shade to rest himself. Whilst searching about the Rája reached the entrance of a cave where was a watchman (*kshetrapála*) sitting and asked the man where he could find a shady place to rest in, the guardian of this cave replied—' Enter here, and you will find all that you desire.' So the Rája went into the cave and near the entrance he met Dharma and Narsinha and went on with them, and then he came to the serpent Seshnág with the thousand heads and the daughters of the Nága seized the Rája by the hand and brought him before their father. Seshnág asked him who he was and why he had come. He answered—' I am a Suryavansi Kshatriya, and my name is Rituparna, and I came to Himáchal with my army to hunt ; whilst following a great boar I lost my way and wearied with thirst and the sun I came into this cave by permission of its guardian. In a former birth I must have done virtuous acts, that I should behold thee now.'

¹ The Vishnu Purána divides Pátála into seven regions, Atala, Vitala, Nitala, Gabhastimat, Mahátala, Sutala and Pátála, inhabited by Daitya, Dánava and Nága. The joys of Pátála are above the delights of Indra's heaven. The lovely Nága-kanyas wander about fascinating even the most austere ; the rays of the sun diffuse light, not heat, by day, and the rays of the moon give light, not cold, by night. There are lakes, groves and flowers, singing birds and skilled musicians to make life enjoyable. Below the seven Pátálas is Vishnu incarnate as Sesha and known by the name Ananta to the Siddhas. He has a thousand heads adorned with the mystical *svastikas* and in each hood (*phana*) a jewel to give light. He is accompanied by Váruni, the goddess of wine ; he wears a white necklace and holds, in one hand, a plough and in the other a pestle. Sesha supports the whole world as a diadem on his head and is the great teacher of astronomy. The Puránas make him even one with Balaráma.

Then Seshnág said,—‘Fear not, tell me what gods do the four classes of men in the earth now worship’. The Rájá answered—‘They worship Mahádeva and demand from him what they desire.’ Then Seshnág said, “Do you know this cave, and that in it dwells Mahádeva?” and the king answered—“No, nor do I know who thou art, but I desire to know all these things.” Then Seshnág answered and said—‘The name of this cave, O Rájá, is Bhubaneswara and where the end of this cave is not Kapila and the Munis can tell: in it live the three gods, Brahma, Vishnu, and Mahádeva, under the single form of Bhubaneswar, and Indra and the other gods, and the Daityas, and the Gandharvas, and the Nágas dwell here and Nárada, and the other Devarshis¹ and Vasishtha and the other Brahmarshis,² and the Siddhas and the Vidyádhara and the Apsaras. No sinful men have yet entered this cave, here are the grottoes where Mahádeva and Párvati dwell; behold them; but as with your own eyes you cannot see them, I give to you the eyes of gods.’ Then Seshnág gave to the king the heavenly eyes and showed to him Pátála and the dwelling of the gods and the Gandharvas, and Nágas, and Daityas, and Dánavas, and Rákshasas, and the king did them due reverence. Then Seshnág showed him the eight families of serpents, and the Siva-ling of Visveswara and Airávata,³ the elephant of Indra, and the *Sáryáta* and *Kálpavriksha*,⁴ the trees of the gods, and Vrihaspati,⁵ the Guru of the gods and the horse of Indra, called Uchchaishrava and the cave Seshávati in which dwells the serpent king Ananta, whose breath rushes forth into the earth from

¹ The Rishis or sages of the celestial class who lived in Vaidik times in Deva-varsha and are generally recognized as the elder Rishis. The category varies with the different works and some of those called Brahmarshis by the Vishnu Purána are as old as the oldest hymns of the Rig Veda: see Muir's Texts, III, 219: Wheeler, II., 425.

² The Brahmarshis, Brahmas or Prájápati, the mind born sons of Brahmá are Bhṛigu, Pulastya, Pulaha, Kratu, Angiras, Marichi, Dakṣha, Atri and Vasishtha according to the Vishnu Purána, to which some add Nárada Dharma, Adharma, Sankalpa and Ruchi. Hence the term Brahmarshi-desa given to a portion of Central India in the Epic poem. Wilson, II., 143.

³ Airávata, the elephant of Indra, is one of the articles produced from the churning of the ocean. The others are the (1) *Halahala* or *Kálikáta* poison which gives his name of Málakantha to Siva; (2) *Váruṇi* or Sura, goddess of wine; (3) the white-eyed horse of Indra, Uchchaishrava; (4) *Kaustubha*, the jewel of Vishnu; (5) the cool-rayed moon; (6) the sage Dhanwantari, clothed in white, with the *amrita* in his water-pot; (7) the goddess Sri; (8) the Apsaras; (9) Surabhi, the cow of plenty, the fountain of milk and curds, and (10) the *parjáta* tree “which is the delight of the nymphs of heaven: perfuming the world with its blossoms. This *parjáta* is one of the fine trees of Paradise and is identified with the *Erythrina indicus* or ‘coral-tree.’ It is frequently mentioned in the Puráns. The *Sáryáta* are descendants of Valvaswata.

⁴ One of the trees of Indra's heaven.
⁵ A celebrated sage, son of Angiras and husband of Tára, also the planet Jupiter and like Sarasvatí presides over speech.

Bhrigutunga¹ and the Muni Bhrigu² and Sanatkumára³ and other Devarshis and the Hátakesha⁴ Siva-ling.

Then he took the Raja further into the caverns of Pátála and shewed him the roads to Swarga and Ganesha ; and the Siva-ling of Sateswara and the earth resting on the head of the Serpent Ananta and the Siva-ling of Saureswara and Párvati. Then he shewed him Pátála-bhubaneswari Devi, and near her the Búgisha and the Baidynátha Siva-lings, and on the left of them hidden by a rock the Gananátha-ling. Below again he shewed him a cavern into which he looked and saw a light shining like an emerald (*marakati*) in it were the Munis absorbed in religious exercises and there in the midst sat the Muni Kapila⁵ and the Siva-ling of Kapi-lisa and the dwellings of the Dánavas and Daityas, and by this road he transported him in an instant to Ujjain⁶ and shewed him there the river Sarasvati and the Siva-ling of Malúkúla. Then in another instant they were back in the cavern and there Seshnág shewed the Raja the cave of Sukshma and in it was Ganesha, and the forests of Kadalivana⁷ and the Muni Márkandeya.⁸ Then they returned to the cave of Pátála-bhubaneswara ; and he showed him another cave through which goes the road to Setubanátha-rámeswara,⁹ and in it he showed Chandra-sekhara.¹⁰ This cave was forty *kos* long and forty *kos* broad, and its sides were formed of emerald ; thence in a moment they returned from Rámeswar into the cave of Pátálabhubaneswara and entered another cave through which they went to the river Godávári and bathed in it, and another cave through which they went and bathed in Ganga-ságara and worshipped at the Siva-ling of Chandeswara.¹¹ In one of the caves Seshnág showed the Raja the *asrama* or hermitage of Márkaudeya Rishi and the five Siva-lings of the five Kedáras. In another cave he showed the Raja the road to Baijnáth ;

¹ The peak of the Rishi Bhrigu near Pokhri in patti Bherang where there is a cave from which comes a wind.

² One of the ten Mahárshis named in Manu and father of Sri or Lakshmi by Khyati in one of her births previous to the churning of the ocean. Called also lord of Lakshmi-pura on the Nerbuda known as Bhrigu Kachcha.

³ 'Always young,' one of the sons of Brahma.

⁴ *Yátaka*, 'golden'; name of a Siva Ling on the Godávári.

⁵ Name of a sage, the founder of the Sankhya philosophy.

⁶ In Málwa.

⁷ Kadaliban, 'plantain-grove,' a forest in the Dakhin celebrated for elephants.

⁸ The narrator of the Márkandeya Purána.

⁹ The Siva Ling at Rámíeswaram, at the bridge from the continent to Lanka, set up by Rama : see Wheeler, II, 355.

¹⁰ 'Moon-created,' an epithet of Siva, also the name of a mountain.

¹¹ Chandi, another name of Párvati.

and the Siva-linga of Nilakántha and Bali,¹ the king of the Daityas.

Then in the great cave he showed him the cave of Brahma-dwára² and its Siva-linga and there worshipped Kámadhenu³ from whom falls down the milk on Mahádeva. Here there is a pool called Siva-kunda, the water of which if any one drinks without permission from the deity, he is struck with the trident of Siva. Then the Raja asking permission of Mahádeva, drank at the pool and Mahádeva said to the Raja—'Within this space thirty-three kroses of gods remain in attendance on it.' Then Seshnág showed him the moon and stars and the Ganas and Gandharvas and the great Mahádeva-ling, on one side of which sits Brahma and on the other Vishnu. These three gods dwell here in one shape as the Siva-ling of Bhubaneswara. Then in the cave of Smara he saw Mahádeva throwing the dice with Párvati and the other gods standing by adoring. Then he saw another cave, ten thousand *yojanas* in circumference, at the door of which sat a guardian snake. This cave was lighted with the light of jewels, and in the midst was a house made of precious stones, and in it a bed of the same, and on it, on stuffs as white as milk, sat Briddha-bhubaneswara, Mahádeva and Párvati. Then Seshnág took him through another cave to Kailása and the Raja bathed in Mána-sarovara. Then they came back and they showed him the cave of Smeru where was Siva sleeping with matted hair on his head, and wearing the skin of a tiger and having a snake as a *janeo*⁴ and near him Ugratára Devi,⁵ and he showed him the cave of Swadhama and the Raja asked—'What is the light that flows forth from the midst?' and Seshnág answered—'This is Tejomáya Mahádeva⁶ tell it not to any one; from this light sprang forth Vishnu, Brahma, and Siva when the universe

¹ Bali was the son of Virochana, son of the great Daitya Prahláda. He conquered Indra and the other gods and was, in turn, vanquished by Vishnu in his Vámana or dwarf incarnation and sent as ruler to Pátála: see page 321. ² Now called Brahma-kánthi, a small cave branching out from the great cave. ³ The cow belonging to Vasishtha which yields all desires, here represented by a rock somewhat in the form of a cow from which water trickles on to the top of the Linga. ⁴ The sacrificial thread. ⁵ The 'terrible goddess' as Siva is called Ugras, the terrible lord. Rudra or Siva was born half male and half female, but separating himself into two parts by order of Brahma, each sex became multiplied and of two classes dark or fierce and light or agreeable. Hence the eleven Rudras and their wives. Ugraretas, Bhava, Kála are among the dark forms of the male and Durga, Káli, Bhaváni, Chandí, Mahátrí, Ugratára, amongst the fierce forms of the female. Similarly Siva, Manu, Mahat are the agreeable forms of the male and Lakshmi, Gauri, Uma the mild forms of the female. ⁶ 'Whose form is light.'

was created, and from this light the whole world is enlightened. Look in the midst of it and you will see a form which is Vishnu the creator of the universe. He who understands the Vedánta and the Shástras calls this light Brahma. Not even the gods can come before this light : worship it. From this cave goes the road to Kedára.' Then they went to Kedára and worshipped the Siva-ling and drank at the spring of Udaka,¹ and they went to Mahá-pantha² and thence returned to Pátála-bhubaneswara. Then the Raja said in his own mind—' Am I mad or am I dreaming ; what is this Pátála that I am seeing ?'

Then Seshnág said to the Raja—' Take thou a thousand loads of jewels borne for thee by Rákshasas, and this horse, the speed of which is that of the wind and go to thy own home ; but tell of Pátála to no one, and you and your family shall flourish. There shall hereafter be a Brahman called Batkala who shall tell of this cave to mankind, then they shall know of it.' Then the Raja mounting on the horse came forth with the Rákshasas carrying the jewels and thanked Seshnág ; then he went to the mount of Dáru and on the banks of the Sarju he found his army who were searching for him, and he returned to Ayodhya and stored up the jewels in his treasury and dismissed the Rákshasas who had carried them. Then the Raja called his Ráni and his sons and told them all that he had seen and divided the jewels among them. While he was telling of the wonders of Pátála the messenger of Mahádeva came and seizing the king carried him off to the dwelling of Siva. He who shall hear this history of Raja Rituparna and this *máhátmayá* of Pátála-bhubaneswara all his sins shall be forgiven and he shall enter into the paradise of Mahádeva.

KEDARA-KHANDA.

THE Kedára-khanda section of the Skanda Purána occurs in the same form as the Mánasa-khanda and opens with the usual philosophical inquiries as to the origin of things³ of which the following may be taken as a specimen :

" This is related by the Sáta Sanaka and other risbis. First the Rishi Sanaka asked :—" What is Brahma ?" he is without the three qualities,⁴ i. e., without

¹ Now called Udak Nauli. ² The peak above Kedár. ³ *Niryama*,
' without the three *guna*s or qualities,' an attribute of the Supreme being.

*satva*¹ or *rajas*² or *tamas*³: he is *satya*⁴ and *jadn*⁵ and *anand*⁶: he has neither name, nor class, nor senses, how then shall he be discovered or understood? and how from this Brahma without qualities did the world proceed?" The Sūta answered and said:—"Vaiśiṣṭha Muni," the son of Brahma, told this to his wife Arundhati: she asked, "You know all things, the universe proceeded from Brahma, how shall he be discovered? and in the Kāli Yuga when men cease to perform due worship and believe not, how shall they obtain release, and how was the world created, and what are the duties of the four classes, and how many are the *manvantaras*⁷ and *Yugas*? Vaiśiṣṭha answered and said: "This question was asked by Pārvatī from Mahādeo, and he answered thus: "He is without form or sense or colour, nor does he perform any work; he is not created nor does he resemble any created thing; he is joy; he is without master; he is the soul of the universe; he is without colour, neither white nor black nor red nor yellow, nor of all colours mixed together; he has neither body nor form, yet there is nothing in the universe in which he is not. He neither performs any acts nor does he sleep, nor has he any senses. What the Supreme Spirit really is, neither Brahma nor the gods can tell. He is without qualities: without beginning, middle or end; without visible form or any form, separate from all things, yet pervading all things. The followers of the Sāṅkhya call him *parushu*, the Vedāntists call him *gyān*, the Advaitabadi of the Nyāya call him *jīva* and *brahma*. The followers of the Mīmāṃsā call him *karma*, whilst those who hold with Patañjali address him as *śaśevara*.⁸ The Saivas say he is one with Śiva, the Vaiṣṇavas that he is Viṣṇu, the Sauras that he is the sun, and the Śāktas that he is the *Sakti*. Mahādeo alone know something of him, but not all; he is without the qualities of stability, activity, or stagnancy; he has neither beginning nor middle nor end; he is not perceptible by the senses; he is without bodily form, yet everything in the universe bears his form: he had no beginning; he is above and beyond all things. The followers of the Sāṅkhya call him *parushu*; the Advaitabadis say of him that he cannot be seen with the eyes, yet he pervades all space; he is all-powerful and everything is and has its being in him. The followers of the Nyāya say that he is *jīva* and *brahma*, matter and spirit. Those who adopt the Mīmāṃsā system declare he is *karma* or works, whilst the followers of the Yoga Śāstras⁹ declare he is abstracted meditation. The Saivas say he is Śiva; the Vaiṣṇavas that he is Viṣṇu; the Sauras that he is Surya: the Gāṇeśhas that he is Gaṇeśha, and the Śāktas that he is *Sakti*. The Supreme Spirit, O Pārvatī, whence this universe arose was water, the depth, length and breadth of which no one can tell; in which are millions of Brahmāṇḍas¹⁰ and Brahmās¹¹ of various forms. In every Brahmāṇḍa are the three gods, Brahma, Viṣṇu and Śiva and Indra and the other gods and each has its separate seas and rivers and mountains. He is eternal, his face is turned to every side and in these Brahmāṇḍas there is still the all-pervading spirit. This water of the Supreme

¹ Goodness, knowledge, quietude.

² Activity, passion.

³ Darkness, stagnancy.

⁴ He who is truth.

⁵ Or Gyān, he who knows.

⁶ Joy. ⁷ Urja or 'energy' is the usual name of the wife of this Mānasa-patṛa, or mind-born sage.

⁸ Periods of a Manu, each of which comprises seven *Yugas* or ages and is ruled over by its own Manu and sages. Six *manvantaras* have passed and we are now in the seventh under Vaisnavata Manu. Seven more have to come before the day of Brahma is completed: see further Wilson's works, VI., 43.

⁹ Reference is here made to the schools of philosophy.

¹⁰ followed by Patañjali.

¹¹ The nāṇḍanīc egg, the embryo of world.

¹² The active principle of creation.

Spirit which is outside the mundane egg once came into the world and this is Ganga ”

Párvati then asks Siva to tell her how this came to pass and how the egg was formed. Mahádeo answered and said: “Li-ten, O daughter of Himáchal, to the history of Vishnu. First there was only water in the universe, in which floated Vishnu on a bed borne on the serpent Sahnág. This was when the former world had ended and Vishnu determined that a new world should be created. At the

thought, there sprang from his navel a lotus and in the lotus was born the four-faced Brahma.¹ Then Vishnu said, ‘Create the world.’ When Brahma heard the words, he listened and saw Vishnu and said: “Thou art the chief of the gods; thou art unaffected by any thing; thou art without form visible or invisible; thou hast neither beginning nor end. Siva and the other gods cannot tell who thou art, much less can I duly adore thee. I am a child and without knowledge, and my mind is overwhelmed with ignorance, how then can I fitly glorify thee? Where are thy hands and thy feet and thy limbs, where art thou thyself? This much only can I perceive that thou art this ocean with the waters of which thou cherished all things animate and inanimate. Every created thing depends upon thee; thou art the light of the sun and the moon and the stars through which darkness is driven away from the world. Thou art wind and the breath of life and ether above the world; thou art time and its divisions and the senses and mind. The body² is the chariot, the soul³ is the master within and the mind⁴ is the charioteer; the bodily faculties are the horses and the senses are veins. The charioteer must be vigilant or the chariot will be upset. Thou art perfect, pure and unchangeable. Until thou hadst formed the thought of creation, until then thou wert the Supreme spirit, neither creator nor created: When thou hadst performed this wish then thou becomest creator and created.” I am powerless, how shall I create the world?; Vishnu answered and said “Brahma became the creator (*prajápati*) of the universe. I give to thee all knowledge; create the universe and live until creation has perished. I am pleased with thy adoration of me, so ask of me whatever boon thou desirest.” Brahma answered and said: “Thou hast created me; I will create all things; I have received from thee all knowledge, what more can I ask for myself? but I will ask one thing and that is that thou wilt be pleased to remain in this world which I shall create.” A great part of the above description has been borrowed more or less closely from the older Pauránik writings, and is followed by the usual description of terms of time, the origin of the gods, demons, Dánavas, Daityas, Rakshasas and Yakshas. Then comes the story of the heroes of the lunar and solar races, and the exaltation of the Bhígirathi as the principal source of the Ganges with some account of the various places of pilgrimage along its banks.⁵

¹ *Chaturmúha.*

² *Vigraha.*

³ *Atma.*

⁴ *Manas.*

⁵ I

have had two manuscripts of the *Kedára-khanda*, one lent me by Ganga Datta Up-rethi of Srinagar, and the other by Dharmanand Joshi of Almora. The latter which was copied in 1816 A. D. has been followed throughout. The topographical account of British Garhwál commences at the 41st chapter and 49th page. The entire account is filled with stories illustrating the holiness of particular places like that of Pátála in the *Mánasa-khanda*. I have omitted nearly all these stories, so that this account is little more than an index to a portion of the *Kedára-khanda*.

Kedár.

The *máhátmya* of Kedár follows the description of the valley of the Bhágirathi. Párvati asks what is Kedár and what are the fruits of visiting its sacred places and bathing in its holy waters. Mahádeo answered and said :“ The place that you have spoken of, O goddess, is so peculiarly dear to me that I shall never leave it nor forsake it. When I or Brahma created the universe, Kedár so pleased me that it shall ever remain sacred to me.” Brahma and the other gods are there, whoever dies there becomes one with Siva. Such as thou, Vaishnavi, art amongst Satis, Hari amongst the gods, the ocean amongst lakes ; the Jahnavi amongst rivers, this peak amongst mountains, Yájnavalkya amongst Jogis, Nárada amongst Bhaktas, the Sálagram amongst stones, the groves of Badari amongst forests, Kámadhenu amongst kine, a Brahman amongst men, the Brahman who can impart wisdom amongst other Brahmans, the wife who honours her husband amongst women, the son amongst children, gold amongst metals, Shuka amongst saints, Vyása amongst sages, this country amongst other countries, a prince amongst men Bāsab (Vásudeva) amongst the gods, the giver of good fortune amongst mortals, my city amongst villages, the Apsaras of heaven amongst dancers, Tunvara amongst Gandharvas, so is Kedár-kshetra when compared with any other sacred place. Mahádeva then relates the old story ; how once upon a time a hunter came here to this part of the Himálaya and after killing a large number of deer wandered northwards to Kedár where he found a number of holy men assembled and engaged in devotions. The hunter sat down at a respectful distance to watch their proceedings when suddenly a deer of a beautiful golden hue sprang up near him and walked gently by. The hunter prepared his bow to shoot the deer but before he could draw the string, the deer had disappeared. Disturbed at this he walked onwards and met Siva armed with a trident, with matted hair, wearing a garland of serpents and accompanied by his train. Frightened at the sight, the hunter concealed himself and the procession passed on. The hunter next met the sage Nárada from whom he learned that Kedár was a place of such sanctity that strange occurrences continually took place and portents and omens appeared, and that if any one desired salvation, he should find it there, though his sins were as great as can be

imagined the virtue that accrued from a visit to Kedár was sufficient to cleanse them.

Mandákini valley.

Mahádeva then gives a brief account of the places of pilgrimage around Kedár. On the lower course of the Mandákini¹ is the holy Siva-kund² where is the Kápila Siva-ling, and above this is Bhrigu-tunga, king of rocks. Still higher up at a distance of two *yojanas* is the babbling fountain of Hiranyagarbha,³ and to the north of this the great Sphátik-ling. A few paces to the east is the Bahní-tírtha⁴ near which is a well where Bhím Sen⁵ worshipped me, Mahádeva. Above this is Mahápanth⁶ four *kos* in circuit abounding with milk and ghi, where the gods dwell, full of gold and jewels and birds with shining wings. Above Mahápanth is the Swargarohini pahár.⁷ At the junction of the Mádhvi⁸ with the Mandákini is the Shiuprad-tírtha and where the Kshírganga⁹ joins the same river is the Bráhmya-tírtha. To the south of this is the fountain known as Samudr-jal, which is of such purity, that whoever even touches its water receives some benefit. To the left is the Purandar peak, where Indra worshipped Siva and where is the Madhálaya-ling. About forty cubits thence is the Hans-kund where Brahma appeared as a *hansa*, and near it is the Bhím Sen *sila* where is the bed of Siva. About six *kos* thence to the south is the Gauri-tírtha where the water is warm and the earth of a yellowish-red colour. Here Gauri bathed whilst her courses were on her and here is the Gaureswar-ling. Whoever smears the mud of this pool on his body, bathes in its water and makes an offering however small shall receive an eternal reward. To the south is Goraksh-áshrama¹⁰ where also there are hot springs and a *ling*, and if any one remains there for seven days, his sins are all forgiven. On the same hill are four pools called Devika, Bhadrada, Shubhra, and Mátangi, bathing in which ensures particular benefits. On the hill

¹ This river flows through Patti Malkhanda from the glacier above the Kedár temple.

² There are several pools of this name, but this is perhaps the one at the confluence of the Madh and Mandákini streams.

³ Gauri-kund.

⁴ Same as the Agni-tírtha near Gauri-kund.

⁵ Now known as Bhím Udiyár, there are a number of caves here.

⁶ The mountain and glacier above the temple.

⁷ The group of peaks above Mahápanth.

⁸ To the east of Nalapatán.

⁹ Apparently one of the streams which form the head-waters of the Mandákini for hence we descend the valley again to Gauri-kund.

¹⁰ Here is the Shubheswar-ling and in the pool near it are numerous snakes who do no harm to those who bathe in it. These snakes occur in the pools at Triyugi and Gauri-kund.

above Gauri-tírtha is the Chárbása Bhairab who acts as watchman to Mahádeva, and who must have offerings of strips of cloth when his lord is worshipped. Káli also resides here and about a *kos* off is Bináyak-dwára¹ sacred to Ganesha. Within the Kedára-mandal and to the west of the Tribikram Nadi² is the Náráyan-tírtha. About a *kos* and a half above is the Náráyan-kshetra where fire always burns. This is the place where the wedding of Gauri Sankara and the daughter of Himáchal took place. Here is the Sarasvati-kund and the Brahma-kund, the water of which is of a yellow colour and harbours snakes. To the south is the Bishnu-tírtha and the Jaleswar-ling and the holy Harida stream.³

Bhillang valley.

Mahádeo then praises Bhilla-kshetra⁴ saying : ' Here I played with thee, O goddess, disguised as a Bhíl. The hill is lovely and well wooded and watered, and from it you can see Ganga, and here is the Bhilleswar-ling. Here I still engage in sport with the Bhíls, clad in a dark-coloured blanket, I wander about the hills at midnight'. Close by is the temple of Kámeswari Devi and less than a *kos* above it, the Surasuta stream where Siva smeared his body with ashes. On the south bank of the stream is the Mátalika-sila. The extent of the Bhillánga-kshetra is five *yojanas* long by four *yojanas* broad, and it contains some sixty streams. To the south of Bhillánga-kshetra is Bagala-kshetra⁵ which extends two *yojanas* in breadth and four *yojanas* in length. It contains numerous places of pilgrimage and temples and that sacred to Bagala Devi is well-known. To the south of this temple is the Punya-pramodini stream and on the northern bank of the stream, a figure of the four-armed Vishnu and, about two *kos* to the south, the temple of Trishírkha Devi. Next comes Shákambhari-kshetra⁶ sacred to Shákambhari Devi where her temple exists. She protects the sages in their devotions and here is a grove of *Sháka* trees and the tigers of the forest and the snake with the jewelled head pays her worship. Near it is the Sankara peak where the feast of lamps takes place on the eleventh of the dark half of Kárttik. To the south

¹ The confluence of the river from Triyugi with the Mandákiní. ² The stream which flows by Triyugi-Nárdyan; the Sind of the maps. The fire has lasted here for three ages, hence the name Triyugi. ³ The Shigadh of the maps and Jahnaf of some travellers. ⁴ The valley of the Bhillang river in Tibet to the west of Triyugi. ⁵ In Tibet. ⁶ In Tibet.

of the peak is the Múrakata-ling surrounded by a hooded snake, and to the left of this is the Nandini river and the temple of Ruru Bhairab adorned with numerous bells, the hermitage of Shukra and mines of copper.

Madh and Tung.

Mahádeva then goes on to say that there are five *kshetras* which every one should visit, Kedar, Madh, Tung, Rudrálaya, and Kalp, all of which are within the Kedár-mandal. A Gaur Brahman is next introduced to tell a story in praise of Madhmaheswar. Here is the sacred Sarasvati-tírtha regarding which the story of the hunter Shambuka is told to show its surpassing sanctity. The hunter and his dog followed the chase until they came near Madh where they met a joyous band of pilgrims singing the praises of the Sarasvati. The hunter cared naught for this and threw his dog into the pond and the dog on coming out shook off some of the water on to Shambuka, but such was the virtue of even this partial ablution in the sacred stream that on their death both hunter and dog were summoned to Siva's heaven. The Tungeswar-kshetra is next mentioned and is said to be two *yojanas* square, and its praise is sung in the story of Dharmdatta and his son Karmsharm. Dharmdatta was a good and pious man, but his son Karmsharm was a gambler and bad character and even induced his own sister to become as bad as himself. Dharmdatta died of a broken heart and his son seized the property and sold it, and squandering the proceeds took to highway-robbery as a profession. Meanwhile his sister turned courtesan and in her travels fell in with her brother and became his mistress. The brother was in the end killed in a forest by a tiger, but a crow took merely one of his bones and carried it to Tung-kshetra where it fell within the sacred tract, and such is the power inherent in the soil of these holy places that Karmsharm after some time spent with the Bishis was transported to the heaven of Siva.

This brings us to the Akáshganga¹ which finds its source in three springs² on the summit of Tungnáth. To the west of Tungnáth is a Sphátik-ling³ and to the south of this the Garur-tírtha

¹ Argákámmi and Agaskamnee of the maps which takes its rise below the temple to Siva as Tungnáth on the Chandraasila peak. ² A white ling-shaped boulder sacred to Siva.

and about half a mile thence the Mán-sarovara in which the lotus grows. To the north of the Mán pond is the temple dedicated to Siva as Markateswar,¹ and to the south of this near the hermitage of Mrikanda, the temple of Maheswari Devi. The sources of the Akáshganga is the best of all places for performing the funeral rites of ancestors.

Rudranáth.

The Rudrálaya or the 'abode of Rudrá' is also called the Mahálaya or 'great abode,' and is introduced by Mahádeo with a long account of his own power and greatness which we omit. Here is the Baitarani stream² sacred to the ancestors where one *pind* equals a *kror* offered at Gya. Here is Shiumukh, the head of Siva, and the place where the Pándavas came to remove the sin of killing their brethren, but Mahádeo showed them not his face, and going to Kedár they obtained a sight of his hinder parts and so obtained salvation. At a distance of half a *kos* is the Mána pool, the waters of which are of a yellowish-red colour, and to the east of this is the Sarasvata pond in which lives the fish called Mrikunda and to the east of the pond a great *ling* in colour and form like a coral bead. On the fourteenth of the dark half of the month, the fish in the pond are fed and oblations are offered for the repose of the *manes* of ancestors. To the north-east is the pool with yellow waters where Mani Bhadra worshipped Siva. Kalpethal³ is the place where Durvása Rishi performed austerities beneath a *kalpa* tree and thus obtained salvation. To the south of the Kalpeswar-ling⁴ is Kápila-ling and below it flows the Hairanvati stream, and to the south of it is Bhringeswar about two *kos* from Kalpeswar. Here there are also hot springs and some distance near them to the west is Gosthal-kshetra,⁵ when Mahádeva is worshipped as Parmeshwar (Pasupati) and an iron *trisul* or trident stands near his temple and an ever-flowering tree of great beauty. To the east Mahádeva resides as Jhasha-ketana-ha (or destroyer of Kandarpa, the god of love), after which his wrath being appeased by Rati, he became known as Rateswar and a pond near his temple⁶ is dedicated to Rati.

¹ In Mako village where the priests of Tungnáth reside during the winter.

² The Kudrigadh of the maps which flows through the valley in which is the Rudranáth temple.

³ Patti Urgan.

⁴ In Urgan village.

⁵ Gosthal in Mailá Nágpur where is the Gopaswar temple and the iron trident.

⁶ In the valley below Gopaswar.

Badarináth.

The account of Badari is given in a conversation between Vasishtha and his wife Arundhati. The holy circle of Badari includes the entire tract (*ksetra*) between the hermitage of Kanwa and the peak of Nanda. Such is the efficacy of austerities performed there that oblations offered at Kanwa's shrine frees even thieves and the slayers of kine and Brahmans from the just punishment due to their sins. To him who bathes at Nandprayág and worships Ramapati there, further benefits are promised. The circle of Badari is three *yojanas* broad by twelve *yojanas* long, and contains the Gandhamádana, Badari, Nar-Náráyana and Kuvera peaks besides numerous streams and warm springs.

Patti Dasoli.

Nandprayág¹ is so named after the virtuous Raja Nanda who here made a great sacrifice which was attended by the gods and many Brahmans. Here is the Vasishtheswar-ling and to the north of it the sin-cleansing Brihika and Birahwati.² The latter is sometimes called the Kalyáni and received its present name from the austerities performed there by Siva himself. Here is a temple to Siva as Bisheswar, and to the east thereof the sacred pool of Manibhadra,³ and to the south of this the Mahábhadra⁴ stream, remarkable for the great fig-tree on its bank and the Súra-tírtha. Two *kos* to the east is the temple of Gopeswari Devi where Raja Danda of the solar race performed austerities, hence the synonym Dandakáranya.

The valley of the Alaknanda.

On the north bank⁵ of the Alaknanda is the Bilvesvar temple surrounded with *bel* (*Egle Marmelos*) trees with fruit as large as coconuts and smooth as jujubes. To the south of the river is the Garur-ganga, the stones of which have the power of removing the poison from snake-bites, and its yellow mud when smeared on the body imparts wisdom like Ganesh. To the north of the Alaknanda is the Charutanwati⁶ stream where is the hermitage of Raja Anant Sri and a temple dedicated to Chandi Devi and on the Mecha peak

¹ At the confluence of the Nandikini and Alaknanda.
Ganga.

² The Mahádeo lake in patti M. Dasoli.

³ The Birch

⁴ In Malli Dasoli

flowing from the Bhadra peak. ⁵ The description now follows the Alaknanda up to Badrináth.

⁶ Now the Mecha-stream in Urgan.

a *ling*. To the north-east is the Gaurya hermitage where Devi subsisted on the leaves of the forest trees for a thousand years and gave the tract its present name Parankhanda. On the banks of the Alaknanda near the hermitage are a *ling* and pool known as Siva-kund. About a mile beyond is the pool Bishnu-kund, and two *kos* farther is Jyotirdhám¹ in which is the temple of Narisingh where Prahlád performed austerities. Here are also the pools known as Brahma, Bishnu, Siva, Ganesh, Blringi, Bishi, Surya, Durgu, Dhanada, and Prahlád-kund, Nárada worshipped Vishnu at Bishnu-kund. From Jyotirdhám the traveller proceeds to Badari, and the Gandhamádana, peak by the confluence of the Dhaula and the Alaknanda (Ganga) near which are the pools already mentioned. The place is called Bishnuprayág and above it is the site of the hermitage of Ghatotbhava who became the watchman of Vishnu. Here there are hot-springs and the temple dedicated to Siva as Muneswar and one to Ghantakarn. There are numerous hermitages of holy men around and every pool forms the source of a stream and every peak the home of a god. Above Bishnuprayág is Pándusthán² where the Pándavas lived for a time engaged in devotion. Here is Pándvesvar Mahádeva. On the right bank of the river is the Nar peak with its thousand *lings* and places of pilgrimage and the Náráyan-kund. Next comes the Bindumati stream and two *kos* beyond is Bhaikhánas where the saints performed the *hom* sacrifice. Above this on the summit of the peak is the Jageswar Bhairab and the Kuvera rock. Then comes the Pravara stream and the temple of Badari where is the Kúrm-dhára and the five-rocks (*Panch-sila*), viz., Náradiya-sila, Báráhi-sila, Nárasinhi-sila, Márkandeya-sila, and Gáruri-sila, with their respective pools. Within the circle of these rocks is the throne of Vishnu. Here also is the Bahni-tírtha and the rock Brahm-kapál sacred to the *manes* of ancestors. Close to Badrináth and near the sources of the stream is Nrisinh in the form of a rock and the Náráyan-kund. A little less than a *kos* to the west is the Urvasi-kund where dwelt Pururuvas and Urvasi and two *kos* off is the Svarna-dhára, and on the banks of the river the Shesh-tírtha. To the left of Badrináth are the Indra-dhára, Deo-dhára, and Basu-dhára streams, the Dharm-sila and the Som, Satyapadam, Chakra, Dvādasiditya, Sáptarshi, Rudr, Brahma,

¹ Jyotirmath.² Pándakeswar, where the temple still exists.

Nar-Naráyan, Byás, Keshava-prayág, and Pándavi-tirthas, the pool of Muchu-kunda and Manibhadra.

Episodes.

Some twenty chapters¹ devoted to stories in praises of the various *tirthas* now follow which may be dismissed after a very brief notice. Arundhati asks her husband to tell her something more about the great places of pilgrimage than their mere names, and he goes on to relate to her what he professes to have heard from Nárada regarding them. These stories show that whatever may be a man's desire he will obtain it by worship at Badari, and whatever may be his sins they will be forgiven if he supplicates the deity through the priests of Kedár and Badari. The first story tells how "Once upon a time there lived a very learned and pious Brahman named Bishnumana on the banks of the Drishadwati. Though the father was learned and good, the son Bishnurati grew up so ignorant and debauched that Bishnumana was obliged to expel the boy from his house. Bishnuvati joined a band of wandering musicians and came to Badari where he sang the great song in honour of Vishnu, and so pleased the god that he was allowed to live near Nárada-kund, and the sufferings which he had gone through in his travels were held sufficient punishment for the evils that he had wrought." The next story tells how Sankara Vaisya, a resident of Pratisthán-pura,² longed for issue, and hearing of the virtues of a journey to Badari went there with his wife. There he found a number of Brahmans engaged in devotion, and after feeding them explained his object, and in return received from them a charm which he gave to his wife, who soon became pregnant, and in due time brought forth a son who was named Dharmadatta. When Dharmadatta grew to man's estate, and proceeded with his merchandise into strange lands, he became enamoured of a daughter of the Mlechchhas, who eventually plundered him of all his property. Dharmadatta returned to his father, who ordered him to make the round of Kedár and Badari in order to cleanse him of his sin. Next we have Janamejaya slaying eighteen Brahmans in order to enjoy the society of a beautiful woman that he met out hunting, and cleansed of his sin by a visit to Badari and the intercession of Vyása.

¹ From the 56th to the 76th on the Godávari.

² Pratisthána is probably Páithan.

Chandragupta Vaisya, a resident of Avanti (Ujjain) had ten sons, and was one day visited by a Badarináth *panda* by name Dharmadatta, who was asked to describe all the wonders of Badari. In reply Dharmadatta told the Vaisya the names of all the places of pilgrimages, and the advantages to be had from visiting them ; that he should take all his property and go to Kedár and Badari, and give it to the Brahmans there, who would ensure his admission to paradise. Accordingly Chandragupta with his wife and sons sat off on a pilgrimage with Dharmadatta, and afterwards remained with him near Badari. Whilst there Chandragupta's wife lost a precious ivory ornament one day, and inquired from the sages who lived near what was to be done to recover it. They answered that she and her family should go the round of the places of pilgrimage again, and when this had been accomplished, and they had arrived a second time at Badarináth, the elephant from whose tusk the ornament had been made appeared, and with the whole party was at once conveyed to the paradise of Vishnu. Then comes a story of how Nárada standing on one foot sang the praises of Mahadeo for one hundred years at the confluence of the Mandákini and Alaknanda, now known as Rudrprayág, and how he was visited by the great god himself who here invented the musical notes used in his worship. Then follows a long explanation of the various *rágs*, their use, value, authority, accompaniments, rules, divisions, &c. In illustration a story is told of Devásraya who had five sons, all of whom were learned and pious except Gopálsharma, who was so ignorant that he was denied the sacrificial thread, and was appointed as cow-herd. Gopál when he became of age reflected on his condition, and sought for those to whom he belonged, and for this purpose travelled to Kailás, and visiting the various holy places arrived hungry and tired at Rudrprayág. Some days afterwards whilst wandering about the sacred place he overheard a Brahman performing his devotions and saying "*Om siváya námah*" as the great compelling invocation to the deity. Gopál immediately commenced repeating this simple litany, and when he had continued muttering the name for some hundred-thousand times, Siva took pity on him and revealed to him his origin and restored his faculties. Henceforth Gopál Siddh became known throughout the whole of Kedár as the favorite of Siva. The Brahmans who had

refused to partake of the feast prepared by Parasuráma were still under the curse pronounced by that sage and were known as Brahmárákshasas until restored by Gopál.

Nilkanth and Pindar.

Arundhati then asks whether the intercession of any other holy man has ever resulted in the release of such numbers as were saved through Gopál. She was told that the Nilkanth mountain lying between the peaks known as Shumbha and Nishumbha was the site of the great austerities performed by Rája Antideva, by virtue of which both the Rája and some thousands of Rákshasas were received into the heaven of Siva. The place is further marked by a temple to Mahisháni Devi. An account is next given of the Chakra-kshetra which lies to the south of Mánasa and is known by the great *bel* tree and the temples dedicated to Bilweswar and Gáneswari Devi, the Heramb-kund and Bainuwa-tirtha. To the east is a temple to Chandi Devi and east of this a pool of yellow water and above it is Bikata-kshetra, so called from the son of Jambha Asura. Jambha had two sons, Bikat and Tat; the first adored Siva and the second Vishnu, and here is a temple dedicated to Siva as Bikateswar. Here is the Sailodak spring, the waters of which if applied to the eyes enable one to see where treasure is concealed. Here also is the Nandeswar temple. Tat-kshetra¹ lies along the Pindar and is the place where Tat with his Daityas performed austerities, and above the site of his hermitage, in a forest surrounded by *bel* and other trees, is a temple dedicated to Siva as Brahma-putreswar. A little more than four *kos* to the north of the Brahma-putrasthán is the Pushkara peak where Pushkar and the Nágás worshipped Siva. Next comes the Muni-siddhini-kshetra, full of deer, trees, flowers, and birds, where Pushkar-nág lives. To the south-east is the temple of Chandika Devi and the Táreswar *ling*. To the south of this is the Káveri stream, where is the Kávereswar *ling*, and further south the Nág-dhára and Nigamálaya with the stream Páphára, where Dwípeswar, 'lord of the Isles,' died. The Jalaswar *ling* is

¹ The Tat-kshetra must occupy the greater portion of Pindarpár. I would place the Brahma-putra sthán in the Wán va'ley and the Pushkara peak might be identified with one of the spurs of Trisúli. There is still a temple to Sengal-nág at the confluence of the Kaliganga and Pindar rivers at Talor and one to Bhakul Nág at Ratgaon and to Bánpa-nág at Margaon in Palakhandá. We next have the valley of the Kaitganga, and then that of the Pindar, after which the tract around Karn-prayág called Siva-kshetra is reached.

within this tract and also a temple to Jaleswari Devi and four *kos* to the east the Benu-tirtha on the banks of a small stream. To the north-east of this stream is the Dandeswar and Maháganapati temples and also one sacred to Bhairab. To the south-east of the Brahmaputrasthán is the Gobind-tirtha at the source of the Pindar river, and the temple dedicated to Bírsháni Devi. To the north-east of this temple is Binateswar, and further south is the Bishumiti-kshetra and the Bisheswar temple and pool. North of these is Gana-kund, the Saumyeswar temple, Kambha-kund and Dasamauli, where Rávan repented him of his evil deeds, and here also the Rávaneswar *ling* is established. Here is the Saudámini stream and on its banks the Sukameswar *ling*. North of the river is Kapilatirtha, Kapileswar, Yogeswar, Bāgeswar, Brahmeswar, and a temple to Ganeah. At the confluence of the Pindar and Alaknanda is Siva-kshetra, where Karna performed austerities. Here are temples dedicated to Uma and Umeswar, the Bináyak-sila, Suraj-kund, the Dhananjaya Nág temple and the Ratna-prabha *ling* with its golden *yoni*. Close by is the Menukeswar temple, the Hivani stream and Pulaheswar *ling*, near which is the Brahma-sila of many colours. Above on the hill is the Manibhadra-kshetra and Maniwati stream, the Yuksheswar *ling* and sacred pool, Barneswar, the Dibeswar-kund where the lotus grows and the Debeswar *ling*. To the left of the Dibeswar *ling* is Svarnákarthán, the Svarneswar temple, the Indra-tirtha, where Bhairab in a black form seized and bound Indra, the Indreswar and Káleswar temples and also the rocks known as Bhím-sila and Hanumat-sila. The last mentioned is of a white colour and has the power of transmuting the baser metals into gold. Beyond these is Bhím-kshetra, in which is the Bhímeswar *ling* and temple.

Káli-kshetra.

Two *yojanas* to the north of Káli-kshetra¹ we arrive at the temple of Rákeswari Devi which marks the site where Shasha, the moon, was freed from the leprosy caused by the curse of Brihaspati. It was in the Nandan woods that the moon met the wife of Brihaspati and debauched her and was cursed by the sage and became a leper. The moon then prayed to Siva and offered oblations here

¹ Káli-kshetra or Kálikasthán, also known as Káliangwára, is the tract along the Káli near its confluence with the Mandákini below Kálimath.

and obtained forgiveness. Arundhati then asks where the Rájás paid their devotions, and in reply was told that they visited the Kedár-tírthas and Káli-kshetra on the banks of the Sarasvati. Siva is worshipped in Káli-kshetra as Káleswar and there is a great temple to Káli herself and to the east about two *kos* is the temple of Turana Mandana Devi.¹ To the north of the temple of Káli is the temple of Kot-máyeswari Devi. To the north of the river at the junction of the Barana and Asi streams is Saumya Káshí² now concealed (*gupta*) and only five *kos* in extent, but hereafter to be revealed when its sacred precincts will comprise one hundred *kos*.

Jumna, Tons, and Dehra Dún.

In the country to the west of the Ganges³ are numerous places of pilgrimage, the Brahma-dhúra and others.

Jumna and Tons.

The Jumna flows through the north-western portion of this tract and the Hiranyabáku joins it and their confluence is holy. Still further west is the Tamasa,⁴ and where it joins the Jumna is the Daksha-tírtha and north of it the Bishnu-tírtha.⁵ From the hill above the last-mentioned place of pilgrimage flows the Bimuktida stream, and at its junction with the Tons is a temple dedicated to Siva as Jyoteswar. To the north is the Hem-sringa peak⁶ from which flows the Siddha stream, and at its confluence with the Tons is the Siva-ling to which Brahma paid devotion. North-east of this are the Hiranya-saikata and Hemwati streams, and on the eastern bank of the latter stream the Kasyapa-tírtha. Further west is the Brahmputra stream and on its banks the Brahmeswar-ling and the temple dedicated to Gáneswari Devi. To the north-west is the Satadru⁷ river and on its banks the Panchnadeswar-ling, and west of this the Jambhu-sail, whence the Jambhu stream takes its rise. On the banks of the Jambhu is a temple dedicated to Bishhára Devi and beyond it the Kámdhára stream, an affluent of the Brahmputra and at their confluence the Kámákhyatírtha. From the Saundaryyák peak flows the Sundari river to its

¹ One with Mahisha-mardini, slayer of Mahish Asura. The story of Raktavija is told at some length, how, accompanied by Shumbha and Nishumbha, he ravaged the country of Káli and how she slew him after he had conquered Indra and the gods. Kotimáyeswari Devi assisted by spreading delusions amongst the Daityas and also Kákeswari Devi, whose temple is about two miles above Kálikasthán.

² Now called Gupt-Káshí.

³ Includes western Thri and Jaunsár-Díwar.

⁴ The Tons river.

⁵ Near Káshí in Jaunsár.

⁶ The Naga peak of the

⁷ The Satlaj.

confluence with the Mokshawati stream called Sundar-prayág, where is a temple to Sundari Devi. At Bishnu-prayág is the confluence of the Punyavati with the Bishnu-dhára. Once upon a time the ocean came to the Himálaya and there worshipped Siva for many thousand years: hence the origin of the Samudra-tírtha. When Brahma created the world, the Tamasa was created from the Brahma-kund and its confluence is the Rudra-tírtha and Bishnu-tírtha, where is an image of Vaishnavi Devi and, half a *kos* beyond, the Sakra or Indra-tírtha. To the south-east of the Barana-tírtha at a distance of twelve *kos* is the Bálakbilya peak and river¹ and the Bálakbilyeswar-ling. To the north-east is the temple dedicated to Siva as Somesvar and from the hills around five rivers take their rise and afford numerous places of pilgrimage to the devout. One of the streams called Dharm has on its eastern side the Dharmkút peak where Dharm Rája performed austerities. To the south of this is the Siddhkút peak² and to the north Apsaragiri. To the north-east is the Yakshkút peak and to the south of this the Saileswar-ling. From the peak of Nanda to Káshtgiri the entire tract is known as Kedár-mandal, and within it are innumerable *lings*, all worthy of the highest honour.

Máya-kshetra and the Ganges valley.

From Ganga-dwára³ to Ratnástambha and from the peak of Nanda to Káshtgiri is known as Máya-kshetra. To Brahmanasthán is twenty-three *yojanas*, between the Ganges and Jumna eight *yojanas*, Tiryak three *yojanas*, and Máya-kshetra twelve *yojanas*. Maya is Sati, the daughter of Daksha, who lived near Ganga-dwára, where is the Daksheswar-ling and the places known as Chandika-tírtha, Drona-tírtha, Ráma-tírtha. To see Rikhikesh⁴ and Brahma-tírtha even ensures the fruit of good works. Tapuban⁵ also is a place for performing the funeral rites of ancestors and Lakshmanasthán for achieving good fortune.⁶ Then whoever bathes at Siva-tírtha attains to the heaven of Siva. Near Ganga-dwára is the Níta peak sacred to Siva as Níleswar. Near the Bilwa-tírtha is the Siva-dhára and a great *bel* tree and a *ling* near which Nárada Muni

¹ The Saswa Nadi in the Dún, regarding which the story of the pigmy Brahmans (*śukūhīl*), is told. ² Nágaldh in the Dún. ³ Haridwar. The description now leads us up the valley of the Ganges. ⁴ In Dehra Dún, on the right bank of the Ganges. ⁵ In Dehra Dún near Lachhman-jhálá. ⁶ Here follows some seven chapters describing Daksha's sacrifice. See *Gaz.*, II,

always dwells and the great Ashvatarā Nág with a jewel in his head and who sometimes appears as a sage and sometimes as a deer. In a cave to the left lived the Muni Rishika and here on the fourteenth of the dark half of Shráwan a light is seen and the voices of people talking are heard. About two gun-shots to the east of the temple of Bilvesvar is an excellent spring of water on the hill and below it a den of wild pigs. About a *kos* beyond is the temple and stream sacred to Brahmani Devi. About six *kos* from Bilwa-tírtha is the temple sacred to Siva as Trimurtteswar, near which is the Sunandi stream and the temple of Sunandeswar and the yellow stone known as Nandi-sila similar to the stone of the same name at Gaya and the *ling* called Nandeswar. A *kos* hence is the Bírhadra tapasthal and the temple dedicated to Siva as Bírhadreswar. About half a *kos* to the south are other pools and *tirthas* and *lings*. Next comes an account of Kankhal with numerous stories of its various places of pilgrimage, the Kusha-tírtha, Bishnu-tírtha, Samudra-tírtha, Siva-tírtha, Ganesh-tírtha, &c. To the north of Ganga-dwára the Kaumadwati stream joins the Ganges at Ronuka-tírtha and about half a *kos* above the Bajra-sila stream. A *kos* to the north flows the Sankarballabha or Chakru stream and joins the Ganges where the temples dedicated to Siva as Sankareswar and Bírhadreswar stand. Two *kos* to the west is the Sálihotreswar temple and, a short distance beyond, the Rambha stream which joins the Ganges at Rambheswar.¹

Kubjámra-kahetra.

We have next Kubjámra-kahetra, where is the Kumud-tírtha, to the south of which is the temple dedicated to Siva as Chandeswar, and near it the Sárhav-tírtha, where every Sunday the Sun comes in the shape of a bee and bathes in its waters. More holy still is the Purnamukh-tírtha, where are springs of warm and cold water and the Someswar-ling, and near it are the Kárbír-tírtha and Agni-tírtha. Next comes the Báyavya-tírtha, the Aswattha-tírtha with its great *pípal* (*Ficus religiosa*) tree, the Básswa-tírtha and Chandrika stream and Ganapa Bhairab of terrible form. These are succeeded by the Báráhi-tírtha and the Samudra-tírtha with its variously coloured waters. To the north of Kubjámra is the

¹ These appear to be in Tihar.

Rishi peak. Tapuban¹ lies to the west of the Ganges and is the place where Rámachandra retired to devote himself to religious austerities. Below it is the Bilama-tírtha where Seshnág of the white body and coal-black eyes loves to dwell. To the north-west of Ganga-dwára is the hermitage of Ráma, and Ráma-kshetra extends for sixteen *yojanas* from the Dhenu peak to the Betravati stream. Within this tract is the Kelikheti stream, on which are temples to Chandi and Durga and also the Ghantakarn-tapasyasthán. To the west of the latter place is the Bhuteswar-ling and the Kuhú stream and a great cave sacred to Márkandeya and other Rishis. There are also pools called after Ráma, Sita, and Hanumán, several lings and temples to Durga and Prabalika Devi. Drona-tírtha is near Deo-dhára where is the Deveswar-ling and the Doojanya stream. To the west is the Navadola stream and six *kos* north the Dhen forest and Dhen stream. To the east of these is Kákáchalsthán and west of it the Renuka stream. To the east of this is the Paryenkini stream and at the confluence of the two, a place of pilgrimage. The place where Dasaratha shot the crow in the eye is called Pushposwar-deosthal and is within the boundaries of Kákáchal. Dronasthal lies to the east of Máya-kshetra and is held to be eight *yojanas* long and three *yojanas* broad.

Nágáchal and Chandrabán.

To the south-east of Deo-dhára at a distance of about three miles is Nágáchal and to the west of it the Subhanshraba stream. Two *kos* to the west of the Deo peak is Chandrabán, where there is a *ling* and sacred pool, and to the west of it the Chandravati stream and on its right bank the Bishn-pád. To the north-east is the Subahan stream and west of it about two *kos* a temple to Gankunjur Bhairab at the source of the Gan-dhára, whilst a temple to Chandika crowns the summit of the peak. To the north is the Svarneswar-ling and half a *kos* beyond the Deogarh stream which joins the Sankaraballabhs stream. To the west of Doo-dhára and on the other side of the Chandrabán at a distance of about eight *kos* are the sources of the Jumna and Ganges with their numerous places of pilgrimage and sacred pools. The Chandreswar temple and pool and stream are all within the Chandrabán.

¹ As already noted this place is on the Tihri boundary in Dehra Dún.

The Jumna and Tihri.

To the west of the Jumna is the temple sacred to Káleswar and Káleswari and the Deojushta stream which joins the Jumna. East of the Jumna is Yavanesbaryya's throne known also as Yavanesha-píth, four *yojanas* in extent. Within this tract is the Yoni peak, the Yoneswar *ling* and the home of Káliya Nág, and here in former times the Yavan Kál came to pay his devotions and hence the names Yavanesha-píth¹ and Káliya. To the south is the Brahma stream, and to the north the Rudra stream, and to the south of it the Bhasmamaya Páni with the white coloured rock honoured as a *ling*. To the east is the Bishnu stream and more easterly still the Ráma stream which unite at Bishnu-tírtha. To the west on the banks of the Jumna is the Shiu-tírtha, the Rishi-kund and Sharabhang-tírtha and the Vasishtha-tírtha on the Brahma stream. From the peaks above Vasishteswar flow seven streams. To the west of the river is the Surakút peak² where is the temple to Sureswari Devi and west of it that to Kalika. To the north-west of the Brahma peak is the Sundari-píth and the Brahmaputra stream, the Sunda-reswar-ling, and the Haimvati stream which joins the Sundari and then forms a *tírtha*. The Haimvati has its source in the Siva peak, and on its banks is the Bhagvati ling, to the south of which is a pond with yellow water and the Bhuteswar-ling. Next comes Indra-kund and to right of it the Sakra-tírtha and Rudra-tírtha and, on the banks of the river, the Trisul-tírtha. To the west is the Mahatkumári-píth where is the temple dedicated to Siva as Saileswar and the Bálwata stream. To the north is the Kunjurkút peak where are temples dedicated to Bála and Tittirparnaka Devi. The latter is situated at the confluence of the Muni and Parni streams. To the north is the Bedbarna stream and to the west the Dewal rises on the peak of the same name. Here is the temple dedicated to Siva as Dowaleswar and the Dugdh-dhára.

Bhágirathi and affluents.

To the east of the river³ (*Ganga*) is the Chandrakút peak where is the temple to Bhubaneshi Devi and on the summit the Jagates-

¹ This is the only allusion to the Baktrian Greeks that has been found.
² Sarkot at the head of the Ráma-Sera valley.
³ The name Ganga or 'the river' is applied either to the Bhágirathi or to the Alaknanda according to the locality.

war-ling. To the south is the Nágeswar temple and near it the Bhagwati stream : to the north-west is Bágéswar and west of it the Nákshatra Panch-dhára and Chámra-dolini streams and the temple to Chámreswar. Gardabha Asura was slain by the Rishis on the mountains above Chámreswar now marked by the temple of Gardabhotkarnádini Devi. To the west on the banks of the river is the hermitage of Brahma and the Koteswar-ling. In the same tract are several *lings* and pools and places of pilgrimage. Bhadrson's hermitage is also here and to the north-east near Bhillang-sarovara the Sateswar-ling, and at the confluence of the Bhillang and Bhágirathi the temple to Gáneswar and the Dhanush and Śhesh-tírtha. To the north of the river is the Málvatya hermitage, near which is the Ashmurtteswar-ling. To the west near the Kútádri range is the Raudrisila, and to the south of it Yaksharaja's tapasthal and to the west on the Shékhar peak the Parnaban. Next comes the Gobardhan peak with its *ling* and temple, and to the south on the west bank of the river the Bháskara-kshetra with its *ling*, pools and temple. Then comes the Nawala stream and to the south Gaumukh. West of Bháskara-kshetra is the Ghantakarn-Bhairab, the temple to Kandumati Devi, the Bráhmī-sila and the Mokshavati stream which joins the river at Mokshatírtha.

Deoprayág.

At the confluence of the Ganga and Alaknanda is the great Deoprayága-tírtha¹ and the Brahma-kund where Brahma made his devotions before commencing the creation of the world. To the north of the Bhágirathi is a Siva-ling and between the two rivers the Swayambhuva-ling. Near the confluence we find also the Baitálika-sila, Betúl-kund, Siva-tírtha, Suraj-kund, where Medhatíthi performed austerities, Vasish-tírtha, Báráhi-tírtha, Báráhi-sila, Paushpamála-tírtha, where the Kinnari Pushpamála performed austerities, and Pradyumnasthal. Near the Pradyumnasthal is the Baijpáyan-kshetra, where there is a cave containing an image of Bisnú, and about half a kos beyond near the Gridhráchal peak, the Bilwa-tírtha. Above Suraj-kund is the Rishi-kund, on the right bank of the Ganga is the Saur-kund and east of the confluence and on the right bank is the temple dedicated to Siva as Tundiswar and

¹ Deoprayág in Tibéri.

about four bow-shots off the Danweswar temple near the Danwati stream. At the confluence of the Danwati are five well-known *lings*: Bisweswar, Mahá-ling, Tátakeswar, Tundíswar, and Danweswar. The Bisweswar-ling was established by Ráma. To the south of Deoprayág, where the small Nabálaka stream unites with a branch of the Bhágirathi, is the Indraprayág-tírtha and Indra and Dharm-kund. To the south lies the Dhanush-tírtha, the Brahma-dhára and Indreswar-ling. To the east of the Nabálaka is the Trisúl-tírtha, pool and stream, and to the south the Urmika stream and to the east again the Vainateya stream whose confluence is marked by the temple to Garureswar. To the south is the Bibhá-vini stream and at its confluence the temple sacred to Bháveswari Devi. To the left is the Mend stream and to the right the Rájendri stream and at their confluence the Prithi-tírtha, where Prithu performed austerities marked by the site of the Pritheswar-ling. To the south the Kapinjala stream rises on the Kaparddak peak which is honoured by a Siva-ling, and to the east the Chandrakút¹ peak has another called Deveswar, near which flows the Chandratoya stream. Next comes the Lángal peak with its Lángaleswar-ling, and to the south-west the Manjukula stream which has at its confluence the Bhím-tírtha. About a kos to the east is the Pingalika rock where is a temple dedicated to Ban Devi. Half a kos to the west is the Dhenu stream and half a kos to the south the temple dedicated to Trisúleswari Devi.

About two kos from the Nabálaka stream is the Diptijáleswari-píth where, in former times, lived the daughter of Puloma. Hence to the east is the place where Kandu performed austerities and the Kándavi stream and a temple to Uma Devi and the Kaibaleswar-ling. To the south flows the Kápilanírini stream and to the east is the hermitage of Kapila and south-east the Ráshttrakúta peak. The Rathabáhini is like the Nabálaka, and about eight kos to the south of it is the Banyasrikeswar-ling and a pool with yellow-coloured waters. Some twelve kos to the south is the temple dedicated to Devafáshtreswari Devi with its pools, streams and lings. To the west is the Punyakút peak where is the pool and temple sacred to Nandeswar, and to the south-west the Sundar peak with

¹ The Chandrabadini peak.

the stream and temple sacred to Sundaeswar. Some twelve *kos* to the west by south is the Bhúrideo peak where the prince of that name performed austerities and called the peak and stream after himself. This stream joins the Nabálaka at the Bhavanáshan-tírtha, where are temples sacred to Bhaváni Devi and Bhavamochan. To the south is the Siblo peak where a Bhil of that name performed austerities, and to the left about ten *kos* off a pond, to the west of which flows the Svettarangini stream. To the south-west is the Karindrádrí peak, whence flows the Karini stream, and at its confluence is the Bhairab-tírtha and on the summit of the peak the Mandareswar-ling. Below it on the right side flows the Bhadrata or Bhrigupatni stream, and at the confluence is the Daridra-nibáran-tírtha where Lakshmi resides. Eight *kos* to the south is a temple to Kálika and twelve *kos* to the east are the Bírini and Bharani streams, and at their confluence the Bhrigu-kund, whilst the Bináyak-tírtha lies four *kos* to the south of Indraprayág. To the north-east of the Kubjámra-kshetra on the western bank of the river is the temple dedicated to Siva as Yogeswar, the Siva-tírtha and Suraj-kund. To the east of the Alaknanda is the place where Bena performed austerities and about eight *kos* to the west is the Bishwa stream and on the Támráchal peak a temple sacred to Gubyesvari Devi and one dedicated to Bhairab. To the east is the Nandbhadreswari temple close to the Mena stream and to the left of it the temple of the Devi known at various times as Gunashri or Sátwiki or Rájasimata or Támasi, and here is the Náráyani stream. To the east of the Chandrakút peak is the Kaleswar Bháirab.

Sri-kshetra.

From Kolottamáng to Kolkaleswar is known as Sri-kshetra¹ in extent four *yojanas* long and three *yojanas* broad. To the south on the Kínás peak is the Yamkashán. To the north of the river about two *kos* is the Kolásur peak and the Menuka stream with the Menukeswar-ling. Half a *kos* beyond is Deo-tírtha, where Bhukund paid reverence to Siva, a place marked by the Bhukundeswar-ling. To the south is the Suraj-dhára and to the left the Chand-dhára and again the Bahni or Agni-dhára. To the north of the

¹ The tract of which Sahagar is the principal place.

river is the *Syámala* stream named after the daughter of *Kolásura*. Close to *Indraprayág* is the *Drishadvati* stream which flows from the peak of the same name and half a *kos* beyond the *Kandika* stream. In a cave on the summit is an image of *Kandika Devi*. To the north of the river is the *Saktijeti* stream and at its confluence a temple sacred to *Siva* as *Ganesvar*. Half a *kos* onwards is *Bhawánisthán*, and at the confluence of the *Sankhwati* with the river is a temple to *Siva* as *Nahusheswar*. Above this is *Devipith* and on the banks of the river *Upendrāja-pith*, in which are two streams. On the hills above is a temple to *Kandukeswar Bhairab* and on the banks of the river the *Lésyu-tírtha* and a temple to *Visvanáth*, and above them the *Máya Devi* and *Máyeswar* temples. At the junction of the *Gori* and the river is *Gauri-prayág* and *Bágeswari-dhára* with a temple to *Lakshmi* and above it one to *Nágeswar*. About a *kos* from where the *Indráni* meets the *Gori* is *Rishi-prayág* and one *kos* further *Brihwa-prayág*.¹ Beyond this is the *Indra-punyatam-tírtha*. About half a *kos* from the confluence of the *Kumbhika* and *Gori* is *Bishunáth* and a *kos* above it *Mukti-prayág*. One *kos* above on the mountain is the hermitage of *Alarka*. Near *Gauri-prayág* is the *Svarneswar-ling* and the temple to *Bináyakeswar* and on the banks of the river the *Bináyak-kund*. On the right bank of the river is the *Manjavati-dhára* and a bow-shot off the hermitage of *Alarka* and above on the hill is the *Manjughosh Bhairab*. *Siva-prayág* is situated at the confluence of the *Khandava* and the river. About half a mile onwards the *Kalika* stream is met with and half a *kos* onwards on the *Kari* peak a temple sacred to *Kavi Bhairab*. Below this is the confluence of the *Khandava* and *Batsaja* streams and above them the *Siva-kút* peak, whence flows the *Naráyani* and *Rájketi* streams. To the north of the river is *Dundi-prayág* and above it the *Panyavati* stream takes its rise in the *Kuvera* peak. Near this is the *Kani-tírtha*, the *Dwijihvak-kshetra*, *Sanpat-dhára*, and on the peak above *Dandi-tapasthal* with its golden-coloured image of *Ganesh*. To the east is the temple to *Siva* as *Nirmaleswar* and the *Jambhu* stream and the *Dandika-tírtha*. To the east of *Siva-prayág* on the right bank of the river is the *Siva-kund*, a ling five cubits high and the *Deo-tírtha*. On the north of the river in a cave is *Ratirupa Devi* and

¹ There are names given to very small torrents which join the Ganges.

other deities and several places of pilgrimage, ponds and holy streams.

Close to the Kasi peak is the Bhairavi stream and the Satya-sand tapasthal with Sri-kund and to the east the Bhúsuta stream. To the north of the river above Mundadaitya is the Brahma-kund, and on the right bank about four bow-shots off is Aswi-tírtha, where is the Bhringi-sila and at the confluence of the Sarasuti the Dhanush-tírtha. Next comes the Bhairavi-píth and to the north of the river Kuver-kund, where is the temple dedicated to Ráj-rajeshwari Devi and the Shrávaneswar-ling. Then comes the enumeration of the temples about Srinagar itself, nearly all of which are mentioned with characteristic anecdotes either of the form of the deity worshipped therein or of the persons who established them. On the right bank of the river above Bhairavi-tírtha is the Maheswar-ling, and to the east the red boulders known as Bráhmi-sila and Vaishnavi-sila. Rámachandra offered lotus-flowers to Siva here: hence his form as Kamaleswar,¹ and there is also a temple to him as Nágeswar a short distance beyond. The Katakvati flows from the Golaksha peak, and at its confluence with the Alaknanda is the temple to Katakeshwar. To the north of the river is the Nripeswar temple and the Indra-kund and two arrow-flights to the south, the Siva-dhára and Siva-tapasthal.

Above Kamaleswar is the Bahini peak and Bahini stream and numerous springs of very pure water: also the cave and hermitage of Ashtabakra Muni. Numerous hermitages, temples, caves, pools and streams on Indrakila and the surrounding peaks within Sri-kabutra are now mentioned, few of which are held in estimation at the present time. Amongst the streams noticed are the Manohari, Devoti, Malhumati, Manonmini near the Kilileswar temple, and Jiwanti near a great cave and the Sudyumna tapasthal. The temple to Kans-mardini Devi is on the south bank of the river² where Chapala Apsara performed austerities. Then there is the Mandhar forest and Siva-tírtha where Bharaddhvaj worshipped Siva, the Golakshaja-tírtha, Bináyak-tírtha and the Koteswar-ling. Next the Gogal river and tírtha and the image of Ganesh with ears like a sieve and known as Súrppakarn. On the Mohendra peak is a

¹ This temple is in Srinagar itself.

² In Kotiya village.

great cave communicating with the bank of the river Alaknanda and within it lives Ganapa Bhairab. The Pábani flows from this peak and beyond it is the temple of Mahendreswar. Half a kos from Kateswar on the right bank of the river is the hermitage of Sukra, the Bhárgar-kund and Punya-kund and Sukradhára and Sukreswar temple. In a cave to the north is the Smasháneswar Bhairab and near it the hermitage of Parasuram. Three miles from the river and to the west of the Chaitravati stream is the Gauripíth, and above it the Dípeswar temple where Díppál worshipped Siva and near it a temple to Kalika Devi.

Half a kos to the left is a beautiful spring known as Siddhadrava, and near it is the Mauktikhákhyá-ling. To the north of the river and south of the Chaitravati stream is the Harshavati stream and at its confluence with the Ganges the Turungareswar temple. Then the Rudra-tírtha and the Gosthavashrama-kshetra with stream, pond, temples and *ling*. Above the Harshavati some two kos is a temple to Táreswari Devi. The Sri-dhára lies to the north of the river. The Pattavati is about two kos from the Harshavati and next comes the Lohavati, and where the Pattavati joins the stream coming from the Tailasyáma peak there is a *tírtha*, and at its confluence with the Alaknanda the Jagadeswar-ling. To the east flows the Sunanda from the Koldeh peak and then the Yashovati stream.

Parnashanáshrama-kshetra.

The Parnashanáshrama-kshetra extends from the Akol hill to Nággiri. The confluence of the Mandákini with the Alaknanda is known as Surajprayág¹ and above it is the hermitage of Visvámitra. In the neighbourhood is the Vasisht-kund, Sura-sila, Atri-kund, Gautam-tapasthal, Bhúradhvaj-tapasthal and the Tripureswar-ling. Next comes the Chhinna. Mastakeswari-píth, and to the left the Bhíma-dhára, Bhímeswar temple, Párvati-kshetra and Párvati-kund. To the north-east is the Kamandulabhaya stream and the temple of Puñyamati Devi and Jalaesvar. To the east some two kos is the temple of Kúrmásana Devi, and further east the Muni stream, on which is the Sileswar temple and some distance on the

temple to Agastyeswar.¹ Some three *kos* to the west in the Muneswar-ling and the Siddheswar-ling in Mâyábidhasthán on the Mâyábini stream, and at its confluence with the Bhadrabela is the Shesheswar temple.² Some eight *kos* to the west of the Lásyutarangani³ is the Bhatágúr, and to the south-east from the banks of the Mandákini, the Gangeswar temple⁴ and Sivasri-dhára. Further on Bahulingeswar is found on the bank of the Alaknanda and east of it on the same river Parnashanáshrama. To the east of the latter tract is Devi-kund and a Nágasthán containing a pool, ling and temple.⁵ The Támra stream flows from the Pushkar peak,⁶ and to the east at a distance of two *yojanas* on the banks of the Sarasvati is the hermitage of Sagara, where a *trisúl* is imbedded in the ground. The place where Siva went to Kailás is called Gosthal,⁷ and there is the temple sacred to him as Siddheswar, and to the east is the Digambareswar-ling.

Mandákini valley.

Six *yojanas* to the south of Kedár is the tract known as Guptbáránasi⁸ some two *yojanas* broad, and here flow the Ganges and Jumna concealed from sight and here is the temple to Siddheswar. To the west is the place where Nala performed austerities marked by the site of Nal-kund,⁹ and again the temple to Ráj-rájeswari¹⁰ Devi. On the banks of the Mandákini, Mandhátá,¹¹ the august son of Yuvanaswa, performed austerities, and to the west of this is the temple to Siva as Báneswar. On the Phetkárini peak is a temple to Durga and her lord Durgeswar.¹² To the north-east some two *kos* are temples to Mahádevi and Dwetapati Mahádeo and the Dánwati-dhára. Maheshamardani¹³ has a temple here where she slew the great Asura, and near it is the Patumati stream. To the south is the Kumbhika-dhára and above it is Bishnaneswar. Vyása still lives in a great cave on the Khandákhyá peak, to the south of which flows the Sávitri stream through the Bedmátristhal. To the north-west of Kedár and west of the Alaknanda is

¹ Agastyamuni or Agastmuni on the Mandákini.

² In Tihri.

³ Last

tur river in Tihri.

⁴ In village Phalási in Talá Nágpur.

⁵ Tract

around Nágúth in Bichhla Nágpur.

⁶ Apparently above Pehri village

in Bichhla Nágpur, where Pushkar Nág is worshipped.

⁷ Here we get

back to Gopeswar.

⁸ Gupt-Káshi in Mári village.

⁹ Nalapatan.

¹⁰ In Ráni Taráúli village.

¹¹ Temple in Ukhimath.

¹² In Byunkhi

village.

¹³ In Triyugi-Jáúli village.

the Renuka peak, which also has a temple dedicated to Maheshamardini. To the south is the Bishwa stream which is joined by the Kapila stream, and at their confluence is the Kápileswar temple. Beyond this is the Jamadagueswar and Bhilleswar temples and the place where Bályati, son of Vyása, fixed his hermitage. Beyond this is the Nág river and the great black boulder above which is the Ghosheswar temple.¹ To the left some half a *kos* off is Dharnsila and the temple to Dharmeswari Devi, then to the east on the river-bank the Sháli-tírtha, also called Deo-tírtha. About a *kos* to the north-east is Dhenu-tírtha and near it Káshtádri or Káshtagiri, amid whose forests Siva is worshipped as Káshteswar.

West of the Alaknanda.

Some half a *yojana* to the west of the river is a great peak called Bhalládri, where there is a *bar* tree (*Ficus Indica*) whose shade extends over four *kos* and the Bálakhilya stream. The place where the latter joins the Jalnavi is known as Muni-tírtha and has a temple dedicated to Siva as Bálakhilyeswar. Some half a *kos* hence is the Kapila river, and above it on the hill the Kapil Bhairab. Some twenty-four *kos* to the north of 'the river' is the hermitage of the Rishi Lomasa, near which is the source of the Lomas river. To the north are the white mountains and at the source of the Ganga the Bhágirathi tapasthal and to the north of it the source of the Yamuna. To the north of the Yamuna is the Ratnakoti-giri, where is the hermitage of Pulastya and the Brahmajvála stream. In the latter is the Agni-hrad, and to the north-east, on the summit of the mountain, the pool known as Muni-jvála and numerous mines. Siva is worshipped here as Nilkantheswar, and to the east is the Siddhakút peak, to the south of this is Uma-kund and Gauri-kund with their warm springs. The river flowing to the west is called Siddhtarangi and on its banks is the Siddh-tírtha. To the north is the Trikútádri, from which flows the Sudhatarangi, and at its confluence the place is called Sudha-tírtha. The Brahma and Rudrabhadra stream also take their rise in this tract. and at

¹ Probably the junction of the Mána-rudta with the Jádh above Nilang, known as Nág encamping-ground.

their confluence is the Brahma-tírtha, where Dikpál performed austerities. To the north flow the Chitravati river and the Bhasmadhára and their confluence is known as the Bhasma-tírtha. The Kámdhára joins the Brahmaputra stream at Dhurva-tírtha, and above it the Sundari flows from the Sundar peak and the Mokshavati and their confluence is called Sundar-prayág. The remainder is taken up chiefly with detailed descriptions of places in Tihri.

CHAPTER IV.

HISTORY—(contd.)

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Before considering the ethnography of the Puránas it will be well to notice here the other early records and traditions that we possess regarding this portion of the Himálaya. Although we can hardly reckon amongst them the edicts of Asoka, yet a copy of these edicts and perhaps the most interesting amongst the many that exist was found at Kálsi or Khálsi in the western part of Dehra Dún. Asoka

Asoka's edicts in Dehra Dún. lived in the latter half of the third century before Christ and the existence of his edicts in the Dehra Dún would perhaps show the limit of his power in this direction and that the Dún, even at that early period, must have been of some importance, for it would manifestly be of little use to place an inscription of the kind in an uninhabited jungle. This record is inscribed on a great quartz boulder lying about a mile and a half above Kálsi near the villages of Byás and Haripur and just above the junction of the Tons and the Jumna. It is known locally as the *Chitrasila* or 'ornamented stone' and was discovered in 1860 by Mr. Forrest, C.E. General Cunningham¹ considers the Kálsi text to be in a more perfect state than that of any other of

¹ Arch. Rep., I., 247. A complete transcript of the whole inscription has been made and published by the same scholar in his *Corpus Inscriptionum Indicarum*, Calcutta, 1878. Táránátha (Ind. Ant. IV., 361) states that Asoka received the town of Pátaliputra in appanage 'as a reward for his victory over the people of Nepál who dwell in the kingdom of Kasya.'

the similar edicts found elsewhere, especially in the portion of the thirteenth edict which contains the names of the five Greek kings Antiochus, Ptolemy, Antigonus, Magas and Alexander. There are, apparently, no ruins in the neighbourhood which should lead one to suppose that the record marks the site of an ancient city. The Chinese Buddhist traveller Hwen Thsang, who visited Srughna¹ in the middle of the seventh century, a place identified with the ruins of Sugh on the right bank of the Jumna not far below Kálsi, is silent as to the existence of inscriptions or even of the Dún itself. We may, therefore, well accept the local statement that for some centuries after the Christian era the Dún was deserted. Mr. Williams records² the tradition that Rája Rásálu once lived at Haripur near Kálsi, where his stronghold lies buried beneath a great mound (*tíbrí*). This Rásálu was, according to tradition, the son of the great Sáliváhana, from whom the Saka era takes its name and who possessed a residence also at Khai-ramúrtti, near Ráwal Pindi.³ Another tradition makes the stone the boundary mark between the dominions of the Nága ruler of the hills and the Rájas of the plains.

There are a few notices in the early Greek and Roman Geographers that can be assigned to the Himálaya of these provinces, and these have been collected from the accounts given by the companions of Alexander, by Megasthenes and Daimachus and the merchants, who from a very early period held commercial intercourse with the east. The only special treatise on India that has come down to us is the *Indica* of Arrian, a work of very little value for our present purpose, and the fragments of those that are missing do not lead us to expect that we should gain much by their recovery. Pliny the elder and Ptolemy of Alexandria give us the best accounts of India. Pliny completed

Pliny.

¹ Gas. II, 245. ² Memoir of Dehra Doon, p. 76. ³ The local legends of the country about the Tons and the Jumna are full of allusions to Rásálu. The outline story is common to all that he was son of Sáliváhana, the founder of Sáliváhanpur or Syáikot, and was at feud with the seven Rákshasas who lived in Gandgarh and Mánikpur. It was their custom to eat a human being every day and Rásálu delivered the people from this hateful tax. Colonel Abbott has given a very interesting summary of the Panjáb traditions: J. A. S. Ben. XXIII., 59, 123, and General Cunningham also refers to them, Arch. Rep. H, 32, 153. Mr. H. Rivett-Carnac has called attention to certain archaic sculptures on a rock near Dwára Hát in Kumaon similar to the 'cup-marks,' found on mencliths and rocks in various parts of Europe. Other markings of a similar nature occur on boulders near Devi Dhára and elsewhere in eastern Kumaon. J. A. S. Ben. XLVI., 1, p. 1.

his great work in 79 A. D., and had before him the records of Alexander's expedition and Megasthenes' journey in compiling his account of India from the Indus to Palibothra (Patna), the capital of the Prasi. At the close of the chapter on China, Pliny states:— "After the Attacori we find the nations of the Phruri and Tochari and in the interior the Casiri of Indian race who look towards the Skythians and feed on human flesh.¹ Here nomad tribes of Indians also wander. There are some who state that these nations touch on the Cicones and Brysari." Now 'Conæ' and 'Chiconæ' are also read for 'Cicones,' and 'Conæ' and can only refer to the Kunets of Kunáor, which is known to the Tibetans as Kunu. The Attacori are the Uttara Kurus of the Hindu books, probably as already suggested inhabitants of the hilly country beyond Kashmír. Near them were the Phruri, a sub-division of the Sakas at one time, in Yarkand and to be identified with the Phaunas of Indian writers, and the Tochari or Turushkas, a branch of the Yush-ti who gave kings to Kashmír. The Casiri are one with the Khasíras, a tribe of the Khasas, who are mentioned in the Mahábhárata thus:—"Abhíras, Daradas, Kasmíras with Pattis, Khasíras, Antacháras (or borderers)," clearly showing their position in the hills to the west of the Jumna. The nomad tribes may be identified with the Pattis of sPiti and the Brysari with the people of Basáhr. The statement that the Casiri feed on human flesh is merely an allusion to the name Yaksha² by which the Khasas were commonly known in ancient times. We know that they were numerous in the neighbourhood of Kashmír which is named from them and not from the mythical Kasyapa and under the name Yakshas were employed by Asoka not only to build his great *chaityas* but also as mercenaries. They were found also in Kipin, to which the Kábul valley belonged³ and in Gaudhára.

In his chapter on India, Pliny gives a general view of the position and size of India and of the sources of his information. He brings us first from the Indus to the Ganges and thence to Patna. He then adds:—

"The nations whom it may not be altogether inopportune to mention after passing the Emodian mountains, a cross range of which is called 'Imaus,' a word

¹ Jam Indorum Casiri, introrsus ad Scythas versis, humanis corporibus vescuntur.

² Wilson, VI., 83; the people of Kashmír are known to the present day amongst their neighbours as Kashíras, not Kasmíras.

³ Ind. Ant. IV., 191, 141.

which in the language of the natives signifies 'snowy,' are the Isari, the Cosyri, the Isi, and upon the chain of mountains, the Chalotosagi with numerous peoples which have the surname Brachmanæ, among whom are the Maccocalingæ. There are also the rivers Frinas and Cainas,¹ which last flows into the Ganges, both of them being navigable streams. The nation of the Calingæ comes nearest to the sea and above them are the Mandel and the Malli. In the territory of the last-named people is a mountain called Mallus; the boundary of this region is the Ganges." * * * "The last nation situate on the Ganges is that of the Gangaridæ Calingæ" * * * "In the Ganges there is an island² of very considerable size, inhabited by a single nation: it is called Modogalinga." * * * The country of the Dardæ is the most productive of gold, that of the Setæ of silver. " * * * " The mountain races between the Indus and the Jomanes are the Cesi, the Cetriboni who dwell in the forests (*sylvestres*), and after them the Megalæ, whose king possesses 500 elephants and an army of horse and foot, the numbers of which are unknown; then the Chrysei, the Parasangæ and the Asmagi, whose territory is infested by wild tigers: these people keep in arms, 30,000 foot, 300 elephants and 800 horse. They are bounded by the river Indus and encircled by a range of mountains and deserts or a distance of 625 miles. Below these deserts are the Dasi and Suri."

The arrangement here is somewhat confusing. Pliny mentions the Kalingæ, apparently the people of the coast of Coromandel, then the Marundai or Mandai, the people about Benares, and then the Malli or Multanis. Imaus is derived from the Sanskrit 'Himavat' as Emodus is from 'Himâdri,' both meaning snowy. His Isari and Cosyri here can only be the Brysari and Casiri of the preceding quotation. Next to the east in the hills comes the Izi, who may be identified with a tribe in the Mahâbhârata called Ijikas who are named between the Sûrasenas or people of Mathura, and the Kanyakâgunas, Tilabhâras, Sumfras and Mâdhumattas, which last are one with the Kashmîras.³ These Ijikas lived close to the Chisotosagi, also called Chirotosagi or Kirâtakas along the lower course of the Ganges in Garhwâl: the upper portion of the same river being occupied by Brahman colonies and Macca or Maga Kalingas, a name probably connected with the Mriga tribe of Brahmans who are recorded as the Brahmans of Sâka-dwîpa in the Purânas. We have moreover in the *Vardâ-sanhita* the name "Mâgadhika-kalinga" occurring between Panchâla and Avartta. Now Panchâla is clearly the middle Duâb and Avartta is the same as the Heorta of Ptolemy, a town of the Tanganoi, so that Mâgadhika-kalinga must refer to the country on the upper course of the Jumna or of the Ganges, more correctly called Kyliandrine by Ptolemy.

¹ The Tons below Allahabad near Pandua and the Ken.

² Mandasari or Munger.

³ They include the Kanets, who to this day are divided into Khasiyas and Raos.

The country of the Dardæ lay along the upper Indus—'sub-fontibus vero Indi Daradræ et horum montana supereminant'—a tract celebrated then as in the time of Hwen Thsang for its gold-washings, and the Setæ are the people of Wazîri-rûpi or 'the silver country of the Wazîrs' in British Kulu. Ptolemy places a city called Sætr in his trans-Himâlayan tract near Ahasia regio or the country of the Khasas. The Cesi named first amongst the mountaineers are clearly the Khasas; with them are the Cetriboni,¹ a name of which the first part may be compared with the Chatriai of Ptolemy, and who occupied the tract south of Shaikhâvati and therefore with the Kshatriyas, a tribe (not a caste) mentioned in the Purânas. The remaining names must be assigned from the context to the lower Indus valley or its neighbourhood. The outcome of this inquiry is that according to Pliny the Khasas occupied the country far to the west of their present location in Kumaon and Nepâl, and that the Kirâtakas with the Tanganas held the country between the Tons and the Sârda.

It is, however, to Ptolemy that the student of ancient geography owes his greatest debt. He was born about 87 A.D. and died in 165 A.D., having completed his great work about 151 A.D. He defines cis-Gangetic India as the country to the west of the Ganges as far as its confluence with the Sarju to the south of the Ghâzipur district. Although he must have known many more names, he gives us only three rivers as affluents of the Ganges—*vis.*, the Jumna, Sarju and Son, under the names Diamuna, Sarabos and Soa. At the sources of the Indus he places the Daradræ; at the sources of the Jhelam. Ravi and Chinâb were the Kasperaioi, and at the sources of the Bîas, Satlaj, Jumna and Ganges, the Kulindas, whose country was called Kylindrine. The first are the people of Astor, Gilgit and the neighbouring countries; the second, the people of Kashmîr and of the hill states between it and the Satlaj, and the third will be the people of the hills between the Satlaj and the Ganges. The Kulindas are mentioned in the Mahâbhârata as inhabiting the upper valley of the Ganges within the Himâlaya and they appear to have been independent of Kashmîr. Between the Bîas and the Chinâb was the small state of the Pandavas, and on the lower course of the Indus as far as the embouchure of the Narmada below Gujrât lay Indo-

¹ The two last syllables clearly refer to the Sanskrit 'vana,' 'forest.'

Skythia. The Chatrisioi held the tract south of Shaikhávati and the Gymnosophoi occupied in large numbers the country near the sources of the sacred rivers. To the south in the upper Duáb were the Datichæ, who possessed three towns to the west of the Ganges—Konta, Margara and Batankaissara (Batesar), and two to the east—Passala (Bisauli? and Orza. It is strange that Kanauj is not clearly indicated in any of these lists. Ptolemy mentions only two nations on the left bank of the Ganges—the Tanganoi and Marundai. The Tanganoi were the most northern of all the peoples along the Ganges and they occupied also the upper portion of the Sarabus or Sárda. They are mentioned in the Mahábhárata¹ thus:—"Kántikas, Tanganas, Paratanganas, northern and other fierce barbarians, Yavanas, Chínas," and are placed by the Váyu Purána and Rámáyana amongst the mountain tribes in the north. South of the Tanganoi were the Marundai, who occupied a broad belt along the Ganges from Borita² to its confluence with the Tísta. They appear to have been a small and warlike tribe who were able to take and hold possession of the country near the great river, but were not numerous enough to occupy the inner lands lying near the mountains nor to resist the power of Kashmír. Kassida or Káshi belonged to this nation, who are regarded by Wilford as a branch of the Indo-Skythians and in fact the same as the Húnas. Thirteen kings of this dynasty are said to have reigned in Northern India. In the Puránas they are ranked with the Mlechchhas or foreigners and are considered to be the Maryanthes of Oppian, who states that the Ganges ran through their country. To the east of the Tanganoi came the Takoraioi,³ Korankaloi and Parsadaí, and to the south of the Marundai were the Gangarides in the delta of the Ganges.

The information given by Ptolemy shows us that in the second century of our era, Eastern India comprised the kingdom of Kashmír, which was bounded on the north by the snowy range; on the south by the kingdom of the Pandavas, and on the east the boundary line extended from Dehli to Mathura and then as far as Bhupáí. In the hills the Tanganoi, a sub-division of the Kirátas, held the entire country from the Jumna to the Sárda. In the

¹ Wilson, VII., 161.
with Bál Barell
a tribe, not a caste.

² Lassen suggests that Borita may be identified
³ Represented by the Thákurs of Nepál, here the name of

copper-plate grants preserved at the temple of Pandukeswar near Badrináth and noticed hereafter, we find that one of them is addressed to the officials of the district of Tanganapura and another to those of the districts of Tanganapura and Antaránga and both bestow lands in Tanganapura on certain Brahmans connected with Badari. Some of these lands were bounded on the south by the Ganges, so that the district lay in or about the upper course of that river. Mention is made in one grant of Buddháchal and Kákásthál, and the latter name will be the same as the Kákáchalsthán of the Kedára-khanda which lay near the confluence of the Bhágirathi and Alaknanda, so that we may safely place the district of Tanganapura¹ on the upper course of the Ganges and the Antaránga district in the duáb between the Bhágirathi and the Alaknanda. Later on we may trace the gradual eastward movement of these tribes of Kirátas to Nepál, where we find them at the present day, and perhaps the Tanganoi in the name Tanhan,² whence come the breed of hill-ponies called Tángan; the Thakuraioi amongst the Thákurs in Nepál and the Kirátas or Kirántis further east.

We shall now proceed to examine the ethnographical indications afforded by the later Hindu records. Pauranik ethnography. According to the Vishnu Purána,³ the Kirátas lived to the east of Bhárata, on the west the Yavanas, whilst in the centre dwelt the four castes occupied in their respective duties. The principal nations of Bhárata⁴ were the Kurus and Páncshálas, in the middle districts; the people of Kámarúpa in the east; the Pundras, Kalingas and Mágadhas in the south and in the extreme west, the Sauráshtras, Suras, Abbíras, Arbudas, Kárúshas and Málavas dwelling along the Páripátra mountains; the Sauvíras, Saindhavas, Húnas, Sálwas, people of Sákala, Madras, Rámas, Ambashtas, Párasikas and others. From other sources, however, we can add to this very meagre list of countries and tribes. The Mahábhárata gives⁵ the names of the inhabitants of the different countries in one long list commencing with the Kurus, Páncshálas and

¹ At the time of the grants in the eighth or ninth century, Tapuban was in the Kárttikayapura district.

² This name continually occurs in the legends regarding the dispersion of the Rájpút tribes after the Mussalmán invasion.

³ Hall's Wilson, VII., 129.

⁴ By this name India proper is intended, as no description is anywhere given of the other divisions.

⁵ Hall's Wilson, VII., 186.

Madreyas; then follow the Jángalas, Surasenas, Kalingas, Bodhas, Málas, Matsyas, ** Kárúshas, Bhojas, ** Báñikas, Vátadhyanas, Abhíras, ** Vakra-tapas and Sakas, Videhas, Mágadhás, ** Bhargas, Kirátas, Sudeshtas and the people on the Yamuna, Sakas, Nishádás, Nishadhás, ** Kashmíras, Sindhusauvíras, Gándhárás, ** Kuruvarnakas, Kirátas, Barbaras, Siddhas, ** Trigartas, Sálwasonis, Sakas, ** Tanganas, Paratanganas, northern and other fierce barbarians (Mlechchhas), Yavanas, Chínas, Kámbojas, ferocious and uncivilised races, Sakridgrahas, Kulatthas, Húnas and Párasíkas; also Romanas,¹ Chínas,² Dasamálikas, ** Sudras, Abhíras, Daradas, Kashmíras, with Pattis, Khasiras and Antacháras or borderers, ** tribes of Kirátas, Tamásas, Hansamárgas, &c. This list³ is very unsatisfactory owing to the repetition of the same name in different quarters and with different tribes preceding and following, an arrangement that can only be explained by supposing there were colonies of the particular tribe scattered over various parts of India. If this theory be correct there were Saka colonies in Magadha, on the Jumna and in the Kangra valley. The *Varáha-sanhita* gives a more complete⁴ list and places in the north:—Kailása, Himaván, Vasumán-giri, Dhanushmán, Krauncha-meru, Uttara-kuru, Kekaya with its capital Girivraja (now Jalálpur on the Jhelam,⁵) Vasáti,⁶ Bhogaprastha (Hardwár), Arjunáyana, Agnidhra, Adarsa,⁷ Antaradwipi (Duáb), Trigartta,⁸ (Kotkangra in Jalandhar), Tahora,⁹ Turagáma or Asvamukha,¹⁰ Kesadhara, Chipituasika, Daseraka, Vátadhána, Saradhána, Takshasila (Taxila), Pushkalavata (on the Swát river), Kainátaka, Kantadhána, Ambara, Madraka,¹¹ Málava,¹² Paulava,¹³ Kachobha,¹⁴ Danda,¹⁵ Pingalaka, Mánahala, Kohals,

¹ Can these be represented by the Bum division of the Siyáshpoah in Wámaslán or Káfiristán as it is more commonly called. ² Probably to be found in the Shins of Astor, Gilgit, and Yassan.

³ There are nearly 250 names, the list strung together with little attempt at description even by epithets. ⁴ *An. Res.*, VIII., 243.

⁵ *Cann. Arch. Rep. II.* 14: Avsapati, King of Kekaya, St. Martin, *Etude sur la Géographie Grecque, &c.* p. 110, 400. ⁶ Between the Jhelam and the Indus, St. Martin, *l. c.*, p. 121: Wilson, VIII., 160.

⁷ This and the two following are in the Panjáb. In a passage quoted by Muir (II, 400) Aryávarta is said to include the country east of Adarsa, west of Kálakavana, south of the Himavata and north of Páripátra. ⁸ *Cann. Arch. Rep. V.* 143.

⁹ Tankur, *Atak*, *Ibid.*, II. 7. ¹⁰ This and the five following names refer to the locality as abounding in bayam trees (*aste*) or reeds (*asra*) or prickly bushes (*asata*) or are nicknames, horse-face, &c.

¹¹ Madra-desa, the plain country between the Jhelam and the Ravi. ¹² A division of the Panjáb. ¹³ The Paru country

¹⁴ Wilson, VII., 164. ¹⁵ This and the following six names are assignable to the minor hill-states of the Panjáb; Kohála is the country of the Kohla, a Kulu tribe; Sákala is Wasri Rupi in Kulu, celebrated for its silver, and Mánulava is Mandi.

Sátaka, Mándavya, Bhútapura, Gandhára,¹ Yasovati, Hematála, Rájanya, Kachara, Gavya, Yaudheya,² Sameya, Syámaka, Kshemadurttá. To the north-east (north-west?) is Meruka, Nashta-rájya,³ Pásupala, Kira, Kúshmrá, Abhisára,⁴ Darada,⁵ Tangana,⁶ Kulúta (Kulu), Sauritya, Vanaráshttra, Brahmapura (Bhágirathi valley), Dárvada, Amaraváua, Rájya-kiráta, Chína, Kaulinda,⁷ Palava, Lola, Jatádharma, Kunáha (Kunaor), Khasa, Ghosha, Kanchika, Ekakarna, Suvarnabhu, Vasudhana, Divishta, Pauvara, Chivara, Nivasina, Trinetra, Munjádri, Soma and Gandharva. Again it is said that the Prasthalas, Málavas, Kaikeyas, Dasárnas and Ushnaranas drink of the waters of the Ravi, Jhelam and Chináb. Between the Sindhu and Mathura on the Jumna is Bhárata and the Sauvírás, Sugha, Divya, Satadru, the country of Rámata, Sálava, Traigartta, Paurava, Ambashta, Dháuya,⁸ Yaudheya,⁹ Sarasvata, Arjunáyana, Matsya, Arddhagráma, Hastyásvapura, Mangalya, Paushtika, Sakta, Kárunya.

These dry lists of names are useful, and if we had more of them accurately recorded without any emendations from authors or editors, we might be able to draw some definite conclusions from an examination of them which would throw light on many a doubtful point. They are necessary here to show the connection

between the countries and tribes mentioned in the records and thus afford some little aid to identification. When we find groups of countries or tribes always enumerated together and the same or similar epithets applied to them and sometimes the locality of one or more indicated, we may reasonably assume the position of the remainder to lie in the same direction. We shall therefore take up these names and endeavour to identify as many as we can, omitting those which are already noted as well as those which do not belong to upper India and very briefly noticing the names of places and peoples outside the Himálaya. Taking up the lists of the Vishnu Purána, we have no difficulty in assigning the Kurus to the tract

¹ Peshawar valley. ² The Jád district on the lower course of the Jhelam. ³ Nest or Jagatsukh in the upper valley of the Bísá, the ancient seat of the Páia Rajas of Kulu; we may note that Kulu is still called Kulanta by the people and hence the Khislu-to of Hwen Tsang and Kulatthas of the Puránas. ⁴ Known to the Greeks as the country of Abisarea; Wilson's *Ariana*, p. 190; occurs with Dárva as Dárvábhiasára and lies between Marri and the Margála pass; *Cunn. Arch. Rep.* II., 23. ⁵ Dardistán. ⁶ In Garhwál, p. 234. ⁷ The Kyilndrine of Ptolemy. ⁸ Dhaal in the eastern half of the highlands between the Jhelam and the Indus. ⁹ South of Dhani.

about Thanesar west of the Jumna, known to the present day as Kurukshetra.¹ The Páñchálas² were the people of the middle Duáb extending across the Jumna to the Chambal. Kámarúpa³ is the north-eastern portion of Bengal and the adjoining part of Asám. The Pundras⁴ lived in Bengal proper and the southern part of Behár, the Jungle Maháls and adjacent tracts. Kalinga⁵ is the sea-coast westwards from the Ganges to some distance along the coast of Coromandel. Magadha is Behar. The Sauráshtras⁶ held the peninsula of Gujrát. The Suras and Abhíras⁷ are associated together in the Mahábhárata and Harivansa and appear to have been a pastoral people in the upper portion of the north-western Panjáó represented by the Ahírs and Gwálas of the present day. They are none other than the Sús and Abars of the classical writers, and the first name is one with the subdivision of the Sakas. Ptolemy places the Abhíras on the upper Indus as a powerful tribe. These Abhíras spoke a dialect of Prákrit, for we may refer to them the rustic speech called Abhíríka, which is classed by Chandídeva with the Sákári, Sábari and Utkali or language of Orissa. The commentator on the *Kávyáchandrika*, a work on poetry, expressly cites the language of the Abhíras as an example of the rustic dialects of Prákrit. Wilson connects the Arbudas⁸ with Mount Abu in Rájputána, a celebrated place of pilgrimage amongst the Jainas. The Kárúshas⁹ and Málavas occupied portions of the Panjáó, for the latter are enumerated by the author of the *Varáha-sanhita* amongst the tribes who drank of the waters of the Ravi, Jhelam and Ohínáb. A colony of them may, at a subsequent date, have emigrated to Malwa and given to it their name. Next come the Sauvíras¹⁰ between the Indus and the Jhelam, usually called Sindu-Sauvíras and the Saindhus in Sindh. The double title occurs in the Mahábhárata as the name of one of the chief tribes engaged in the great war who are placed by the Rámáyana in the west and by the Puránas in the north. The Húnas are identified by some with the Húniyas of the present day in Tibet, but here there can be no

¹ Muir, II, 405.² Wilson, VII., 134 : Gaz., II., 63.³ Wilson, l. c.⁴ Muir, II., 40 : Wilson, VII., 170.⁵ Wilson VII., 166 : J. A. S. Ben., 1851,

232.

⁶ Thomas' Prinsep, I., 334 : Arch. Rep. West India, 1874-75.⁷ Gold-

stücker, Sans. Diet., 299 : Muir, II., 46.

⁸ Wilson, l. c. VII., 132.⁹ Socalled from Karúsha, a son of Manu Yalvasvata : they occupied the back of the Vindhya range at one time and may possibly be identified with the Chrysd of Piny, *Ibid.*, 158. They are frequently mentioned in the older records.¹⁰ Conn. Arch. Rep., II., 14.

doubt but that the name refers to a Panjáb tribe. The Sálwas¹ held Rájasthán and Sákala is the Sangala² of Alexander and the capital of Madra or the Panjáb between the Jhelam and the Indus, elsewhere known partly as Hárhaura. The Rámas³ belong to the country of Rámata, which as we have seen lay close to the Satlaj, and the Ambashthas are the Ambastai of Ptolemy and are placed by Goldstücker⁴ in the middle Panjáb, and all agree that the Párasikas⁵ are the people to the west, of and adjoining the Indus. Thus ends the list given by the authors of the Vishnu Purána and which in Wilson's opinion applies to the political and geographical divisions existing about the era of Christianity. It is also mentioned that the Yavanas lived to the west and there can be little doubt that by this name the Baktrian Greeks are intended. To the east lived the Kirátas, who may undoubtedly be identified with the race of the same which governed the Nepál valley, and of whom we shall have more to say hereafter.

We shall now turn to the lists given in the Mahábhárata, omitting those names which have already been identified as well as those regarding which no indications that can be relied upon exist. The Surasenás⁶ were the people of Mathura, the Suraseni of Arrian, and are placed in the Mahábhárata in one place before the Kalingas and again between the Tiragrahas and Ijikas or Itikas and Kanyakúgunas (Kananj) and once more in the north. The Bodhas or Bahyas are supposed to be a tribe of Central India and the Múlas⁷ to have been in Chhatisgarh. There appear to have been two Matsyas, one comprising Dinájpur and Kuch-Bihár called southern Matsya, and a tribe of the same name in the north with a capital at Bairát on the Banganga some forty-six miles north of Jaipur.⁸ The Bhojas⁹ belonged to the Yádava race and had their settlements on the Vindhyan range. The Bahikas¹¹ were a people of the Panjáb and the Vátadhanas were a northern nation, though Nakula places them in the west. Videha is Tírút and the Bhargas are an eastern people subdued by Bhíma. 'The people on the Yamuna' would appear to bear the translation, 'the people on or about mount Yámuna,' an eastern mountain according to the Rámáyana. Nishádhas are mountaineers or foresters

¹ Wilson, *l. c.*, 125.² *Cann. Arch. Rep.*, II., 192; *As. Res.*, XV., 107.³ See p. 326.⁴ *Sans. Dict.*, p. 401.⁵ Wilson, *l. c.*, 134.⁶ Wil-son, *l. c.*, 156.⁷ *Ibid.*, 157.⁸ *Cann. Arch. Rep.*, II v 2⁹ Wil-son, *l. c.*, p. 277.

in general and may here stand for the Paropanisades and the Gándhárns are the people about Pesháwar. The Tanganas are the Tanganoi already noticed and are here called Mlechchhus.

The Daradas are the oft-noticed people of Gilgit and Astor and the Pattis are probably the people of Piti or Spiti. The Khashíras are the Casiri of Pliny, a sub-division of the Khasas like the Kunus. Passing on to the names in the *Varáha-sanhita* we find after Tangana comes Kulu and Sauritya on the upper Tons, then the country of forests, a name applicable to the country about the Jumna to the present day. Then we have Hwen Thsang's Brahmapura in the Bhágirathi valley. Next comes Dárvada or the Dáru country near Almora, near which is Amaravana or the sacred groves of the ancient Jagesar, and then the country of the Rájya-Kirátas, of whom and the Khasas we reserve the notice. Wilford gives the name Sumaphala as that of the country at the source of the Gauges, considering it to be one with Cho-mapán, the Tibetan name for lake Mánasarovara, but this identification is not clear. In one place Sumaphala is preceded by Madhura and Rasaka and is followed by Salila-mani, Lavana, Sankha, Manktika, Abja, Mandákini and Uttara Pandya or northern Pandya, which is traditionally situate in the northern hills. The Mandákini river flows from Kedárnáth, connected with which there are so many Pándava traditions. Brahmapura is also mentioned in the Márkandeya Purána close to Vanaráshttra on the one side and Ekapada,¹ Khasa and Suvarna-bhúmi on the other. Khasa is here clearly Kumaon and Suvarna-bhúmi the Suvarna-gotra of Hwen Thsang identified hereafter with the Nári-khorsum district of Tibet lying to the north of Kumaon and Garhwál. Out of all these names, the only ones that we are justified by tradition and fact in connecting with these hills are the Khasas, Kirátas, Rájyakirátas, Sakas, Nágas and Húnas,² and these we reserve for a more minute and searching investigation.

In the preceding review of the literature bearing on the early history of the Himálaya we have endeavoured to show that whilst living between

Summary.

¹ The Ekas are a hill-tribe akin to the Kirátas and are now only found in Nepal. ² The Húnas of the inscriptions are clearly a powerful tribe of the plains defeated by Dandakara Gupta at the battle of Manabari. For the speculations regarding the connection between the Húnias and the Magyars see H. C. Clarke on the Himálayas, origin and connection, of the Magyar and Ugric in J. Anth. Inst., VII, 44.

the Indus and the Sarasvati, the Aryans had but little knowledge of the Kumaon Himálaya. As they approached the Ganges their information becomes more complete, and though we have no topographical details until we reach the period of the later Puránas, yet we may gather from the older writings that the sources of the great rivers were at a very early period held sacred. We also learn that the hills and forests of northern India were occupied by tribes regarded more as degraded members of the Aryan stock than as aliens in race. That they had attained to a certain degree of civilisation in some respects superior to that reached by the Aryans of the Vedas; they lived in forts and walled towns and were versed in the uses of drugs and knew how to smelt ores. In the later lists we infer from the recognized position of some the probable locality to be assigned to others, and that in the northern Himálaya were found the Dáradas, Kashmíras, Kámbojas, Gandháras, Chínas, Sakas, Yavanas, Húnas, Nágas, Khasas and Kirátas. The first four have been already identified as north-western tribes and the Chínas as representing the people of Gilgit, Astor and Yassan. We next come to the Sakas, to whom local tradition points as one of the earliest ruling races in the Kumaon hills. In one of the many curious legends¹ handed down to us by the early writers it is said that the Yavanas, Sakas and similar tribes were created from the tail of the wonder-working cow Kámadhenu, and that the Kirátas and similar tribes were formed from her sweat, excrement and urine, a subtle distinction implying grades in degradation, and further that the Sakas and Yavanas belonged to the superior class. It may also teach us that this difference was intended to distinguish between the degraded Aryan and the autochthonous tribes, or rather those of the early immigrations.

There is every reason to suppose that the Nágas, Kirátas and Khasas entered India by the same route as the Kirátas. The Kirátas were the first to arrive, then the Nágas and then the Khasas. The earliest notices regarding the Kirátas bring them as far westward as the Jumna in the first century. Local tradition in Nepál gives them an eastern extension to Bhután and at a very early date they held the Nepál valley. Twenty-nine names² of kings of this race are

¹ In the Rámáyana

² Wright's Nepál, pp 69, 106, 2. 2.

given in the local history of Nepál. We have collected the names of fourteen rulers attributed to the Khasa race in Káli Kumaon which are so similar in character that there can be little doubt of a close connection between them. Indeed, the community in manners and religion between the different divisions of the snake-worshipping tribes would alone show a common origin and will also explain how they all insensibly blend one with the other. In the lists of peoples given in the Vishnu Purána,¹ we have already seen that the Kirátas or Kirátis are said to have occupied the country to the east of Bhárata as the Yavanas dwelt the west. In the Mahá-bhárata we find them to occur with the Jángalas (or 'dwellers in thickets'), Kuruvrnakas (or 'dwellers in the Kuru jungles') and Barbaras in one place, and again we have 'Kirátas, Tamásas' and 'Kirátas Sudeshtas and people near the mount called Yamuna'. All these indications² agree with the position already arrived at on the upper Jumna and Ganges. The Tamásas are the people of the Tons of 'dark river', so called from the effect of the forests on its banks and itself an affluent of the Yamuna or Jumna. The Kirátas are also joined with the Sakas and Savaras as Dasyus,³ and in the Rámáyana they are described as "with sharp-pointed hair-knots, gold-coloured and pleasant to behold." It was as a Kiráta that Rudra appeared to Arjuna in the valley of the Ganges. The local annals of Nepál ascribe to the Kirátas a dynasty that ruled in the valley for ten thousand years in the Dwápara Yug, where also there was a celebrated settlement of the Nágas, and after expelling an Abír family they continued in the valley and were rulers of Nepál when Asoka visited it in the third century before Christ. We are further told that they previously lived to the east, but that they removed to Suprabha (Thánkot) to the west of the valley before establishing themselves in Nepál.⁴ The Kirátas are now a short, flat-faced people, powerfully built and are Buddhists in religion. From Dr. Campbell we learn that on the frontier between Sikkim and Nepál they are regarded as generically one with the Limbús. According to him, the sub-divisions of the tracts inhabited by the Limbús are two in number:—Kiránt-des, extending from the Dúd-kosi to the Arun river east and the Limbú-des from the Arun to the Konki. Using

¹ Wilson, VII., 130.

² *Ibid.*, 171, 176, 187.

³ Muir, II., 265, 491.

⁴ Wright's Nepál, p. 89, 106, 110, 312: see also J. A. S. Rep., 1849, p. 733, 766: 1858, 444.

the tribal name 'Limbu' in its extended sense, we have the Hung and Rai divisions, the first of which carries us back to the Húnas and the Hingu of the Márkandeya-Purána. This identification is strengthened by the marked Mongolian features of the people who owing to their isolated position have had little intercourse with Aryans or Aryanised tribes and preserve the original type intact. We cannot be wrong in assigning these Kirántis¹ to the Kirátas of whom we have recorded so much, but they have no connection in appearance, language or religion with any important section of the people now inhabitants of the tract between the Tons and the Sárda.

We have, however, in the name 'Rájya-Kiráta' possibly a living link between the Kirátas of somewhat Tibetan physique and the Khasas of equally pronounced Aryan form and habits, if we can connect them with the

Rájya-Kirátas.

Rájis of Askot in Kumaon. The *Vardha-sanhita* places the Rájya-Kirátas between Amaravana and China or between Jagesar and Tibet, and the title will either mean the princely Kirátas or the Kirátas of 'Rájya.' It has been observed that Kumaon and Karttikeyapura are called 'Rájya' in the Paudukeswar inscriptions, meaning literally the kingdom; but this, however, is merely a coincidence and, as we shall see, no weight can be attached to it, as it belongs to a formula common to many inscriptions in the hills and plains. The important fact is their position in the list and the knowledge that Kirátas once lived to the west and east of the present settlement of the Rájis in Askot on the Káli. The Rájis have often been noticed by ethnographers whose speculations have been based on a few lines in a report of Mr. Traill.² It is there said that the Rájis "represent themselves as descendants of one of the aboriginal princes of Kumaon who with his family fled to the jungles to escape the destruction

¹ It has been attempted to connect them with the Katyáras, but the argument is not worth stating here. According to Hodgson, the alpine basin of the Sapt Kausika or country of the seven Koals was the original seat of the Kirántis, who are identified by him with "the classical Cirrhatae, a once dominant and powerful race, though they have long since succumbed to the political supremacy of other races—first the Makwánis and then the Gorkhális." The Kirántis are now numbered amongst the Limbú tribes of the central region of the Eastern Himálaya. Campbell considers the word 'Limbú' a corruption of 'Ekthémba,' the correct denomination of the people and generally used by foreigners to designate the whole population of the country between the Dúd-koal and the Mechl, except such as belong to the well-marked tribes of the Múrnis, Lepchas and Bhotiyas, who are Buddhists, and the Parbatiyas, who are Brahmanical in religion.

² First Commissioner of Kumaon, in his Statistical account of Kumaon; Report on Kumaon, pp. 12, 87: A. S. Res., XVI., 150.

threatened by an usurper. Under the pretension of royal origin, the Ráwats or Rájis abstain from offering to any individual, whatever his rank, the usual eastern salutation." He also states that there is "a total dissimilitude of language" between the Rájis and Kumáonis and that the Doms may have been descended from these Rájis, "the former being, for the most part, extremely dark, almost black, with crisp curly hair inclining to wool." This is the only account that has ever been given on any authority regarding the Rájis, yet Professor Ritter found in it confirmation of the opinion that a negro race may have been among the aboriginal inhabitants of the Himálaya and Kuen-lun.¹ There is no foundation for the statement that the Doms have curly hair inclining to wool. Out of hundreds that have come under notice not a single one can be said to have any negroid characteristic, though many are of an extremely dark complexion like the other similar servile castes in the plains. Dr. Pritchard² conjectured that the Rájis would be found to resemble the other numerous aboriginal tribes found along the Himálayan border, all possessing "the physical character of the Bhotiyas in general and very unlike the Doms." Dr. Latham,³ too, expresses his conviction that the Rájis are the equivalents to "the Chepang of Nepál."

The only information that can here be added regarding the Rájis has been furnished by intelligent natives of Kumaon who have fallen in with the tribe during their visits to the Askot forests and the following short extract from Captain H. Strachey's journal at Garjia ghat:—"The Rajbári Karinda (agent) caught two of the *Banmanus*, the wild men of Chipula, for my inspection. I saw nothing very remarkable about them except an expression of alarm and stupidity in their faces and they are perhaps darker and otherwise more like lowland Hindustanis than the average Kumaon Paháris." They manufacture wooden bowls for sale and "live under temporary huts, frequently moving from place to place amidst the jungles of Chipula; their principal subsistence being certain edible sorts of wild plants and what game they can catch, and they occasionally get presents of cooked food from the villagers. They have a dialect of their own, but some of them can communicate with their civilised neighbours in Pahári Hindi." The scanty

¹ Pritchard's *Researches*, &c., 2nd ed., IV., 208, 231. ² *Ethnology of the British Colonies*, p. 132. ³ *Ethnology of India*, pp. 11, 16.

vocabulary of the Ráji language that has been collected supports the connection¹ with the tribes of Nepál suggested by Dr. Latham. It is a mistake to suppose that the Rájis are confined to the few families representing them in Kumaon, for there exists information which may be considered trustworthy that Rájis are numerous along the foot of the hills below the province of Doti, the most westerly district of Nepál, and this brings them to the locality assigned by Mr. Hodgson to the Chepáng, viz., the forests of Nepál west of the great valley, and therefore between the Kirántis and the Khasiyas. From their language it would appear that they are of ordinary aboriginal stock like the Kirántis, a still further reason for identifying them with the Rájya-Kirátas of the Puránas.

The Rájis themselves say that they are of Hindu origin. That when the world began there were two Ráj-pút brothers, of whom the elder was a hunter and lived in the jungles, whilst the younger cultivated the ground and had a fixed abode. The younger brother received the government of the world and said to his elder brother, "there cannot be two Rájyas in one country," and accordingly the elder brother retired to the forests and his descendants are now called Rájis, who neither cultivate the ground nor live in permanent dwellings. The Rájis are said to have their own peculiar gods, but they also worship those of the Hindús and, like the people of Kumaon, and indeed of the entire Himálaya, attribute great power to the local deities, sprites, goblins and deified men. They bury their dead² and their only funeral ceremony is said to be this, that for ten days after death they every night place out in the open air vessels of rice and water for the dead. The Bodo and Dhimals to the east also bury their dead, but the Limbús first burn their dead and then bury the ashes. The former are allied to the Kasiyas of Asám, and amongst the latter are included the Kirántis of Nepál. Honesty³ and chastity they hold in great honor. They hide their women from all strangers, declaring that they are of royal race and must not be seen. They seem to be almost omnivorous and are said to approve especially of the flesh of the great *langúr* monkey. They support themselves chiefly by

¹ Traill mentioned (1825) only twenty families and Captain H. Strachey states that he was informed that there were only five or six families (1846).
² In this peculiarity was recognised one of the marks distinguishing the Dasayas of the Vedas.
³ For many of these facts regarding the Rájis I am indebted to a note by Sir J. Strachey.

hunting and fishing and they get what grain they require from the Khasiyas, giving in return wooden implements of husbandry and vessels which they manufacture with some skill. There seems no reason for supposing with Mr. Traill that there is a connection between the Rájis and the Doms. The former are certainly very far from holding such an opinion and profess the greatest contempt for the Doms : so that if one of that class enters the dwelling of a Ráji, the place must be purified with water brought from twenty-two different places. There are twenty or thirty families of Rájis in the eastern parts of Kumaon, chiefly in pargana Askot, and a few families live near Jageswar in Chaugarkha, the ancient Amara-vana. The latter seem to be gradually becoming extinct, and they say themselves that they have never prospered since, forsaking the customs of their race, they began to cultivate the soil. The Ráwats mentioned by Mr. Traill are said to be Rájis who have settled themselves in villages and to whom are attributed the various petty dynasties of eastern Kumaon who preceded the Chands. We shall see hereafter that these Ráwats are mentioned in inscriptions as well as in tradition, and that their country is called Rájya. A class¹ called Lúl inhabiting the same tract has similar traditions, and both still occupy several villages in Káli Kumaon. As they seem to be distinct from the Khasiya population, it is not improbable that the tradition may be true which declares that they were formerly Rájis and that both represent the ancient Rájya-Kirátas of the Puránas, one class preserving many of its old customs, whilst the others has almost merged in the Khasiya population. We shall now continue our notice of the other tribes in Kumaon before proceeding to the Khasiyas, who will take up considerable time and space.

We have already stated that when we pass to the north of the great snowy peaks, we get among a different people, the Bhotiyas. Bod, the native name for Tibet, corrupted by the people of India into Bhot, has given rise to the name Bhotiya for the border tribes between the two countries. Bhot has not altogether lost its proper meaning, for it is still applied generally to the tract north of the great peaks, without reference to physical or political boundaries, though in Kumaon it is now more

¹ Query, people of Lala, see p. 308.

commonly used to signify the country within the snowy range south of the Tibetan frontier. It is rather an ethnographical than a geographical expression, intending the country inhabited by Bhotiyas, rather than one of which any precise boundaries can be named. It will be convenient here to use the word Bhot and Bhotiya in this restricted sense. The adjacent province of Tibet is here called Hundes, and its inhabitants Húniyas. This name was supposed by Moorcroft¹ to be Un-des or wool-country, and by Wilson to be Hiundes or snow-country, but the real name is Hundes or country of the Húnas. This name is clearly connected with the Hiong-nu of the Chinese records and the Húnas of the inscriptions. There is no reason, however, to believe that the name Húna in the Puránas or the inscriptions is intended to apply to the trans-Kumaon Húniyas, but only that they belonged to the same Tibetan race, for the Húnas of those records appear to have been a powerful tribe in the plains, and the allusions to them are too numerous and too important for us to assign them to the predecessors of the comparatively unimportant Húniyas of *g-Nári* in Tibet. That the Bhotiyas themselves are of Tibetan origin is sufficiently shown by the language that they speak, by their Mongolian caste of countenance, and those unmistakeable peculiarities that belong to the Tibetan race, and which are as well marked in them as in the Húniyas themselves. The Bhotiyas are, however, little inclined to admit this origin in their intercourse with Hindús. In the traditional account of the colonisation of the Bhotiya valley in which Milam is situate, and which is given hereafter, they declare themselves the offspring of a Rájput immigration from beyond the snows that succeeded a Sokpa colony, but they are usually called Sokpas themselves. Tibetan annals undoubtedly mention the existence of a trans-Himálayan Kshatriya kingdom, but it was the rulers that were of Hindú origin, not the people. On the boundary line between the Khasiyas and the Bhotiyas we find a mixed population, but no particular account of them need be given here, nor of the Hindu immigrants from the plains who have for so long a time monopolised all important offices in the country and who, at the present day, constitute what we may call the upper grades of hill society.

¹ Travels, I., p. 6.

Much has been written regarding the Doms, the servile race of the hills and correctly enough supposed to be remnants of the original inhabitants. As we have noted they are of exceedingly dark complexion, as a rule, but not more so than the tribe of the same name in the plains and many Chamárs. They have for ages been the slaves of the Khasiyas and been thought less of than the cattle and with them changed hands from master to master. It was death for a Dom to infringe the distinctions of caste laid down by the Hindu laws, such as knowingly making use of a *hukka* or any other utensil belonging to a Rájput or Brahman. Even the wild Ráji, as we have seen, considered the presence of a Dom a source of defilement. The Doms are divided into a number of classes, chiefly according to occupation, like the Chamárs of the plains, and which will be noticed hereafter. In the extreme west we find them on the right bank of the Indus,¹ living in villages apart from the people and filling the same servile avocations. In Yasan, Nagar and Chílás they are very numerous and are "of very dark complexion, coarse features and inferior physique." They are found again in the same position amongst the Aryans of Kashmír and amongst the Dogras of Jammu.² Here again they are noticed for their dark complexion, which unmistakeably marks them out from the light-complexioned Aryans. They are smaller in limb, stout, square built, and less bearded and altogether exhibit a much lower type of face which centuries of serfdom and oppression have not tended to modify. The Dhiyárs or ore-smelters of Jammu, corresponding to the Aguris of these hills and the Bátals of the Kashmír valley, who are carriers and musicians and correspond to the Harkiyas of Kumáon, should be assigned to the same class. The Bems³ of Ladák occupy a similar position and are blacksmiths and musicians. In Kunáor and Kulu we have them again following the same trades classed with a tribe of similar occupation called Kohlis by the people of the lower hills, Chamárs about Rampur on the Satlaj and by themselves and the Kunáoris, Chamangs. The same remark is made about them here also that they are usually darker than the Kunets around them.⁴ The smiths are called Domang in Kunáori and the carpenters

¹ Rep. G. T. S., 1876, p. 27. ² Drew's Northern Barrier, p. 28, 170.
 Bidulph's Tribes of the Himáli Kooch, p. 39. ³ *Ibid*, p. 254; Cunningham's Ladák, p. 291. ⁴ J. D. Cunningham's notes on Kunawár, p. 11.

are termed Oras and both are equally with the Kohlis considered of impure caste. In Nepál these helot craftsmen are represented by the Newárs. Sufficient has been said to show that these Doms in the hills are not a local race peculiar to Kumaon, but the remains of an aboriginal tribe conquered and enslaved by the immigrants Khasas. In the plains we have them in the Gorakhpur district and with Khasas in Kattak and indeed over all the eastern districts of these Provinces, Oudh and Tirhút, but with these localities we have no concern here.¹

In the country lying along the foot of the Kumaon hills from the Kosi eastwards we have a tribe known as Thárus which may be traced further east to the Bágmati river. They are dwellers in swamps and great rice cultivators and are proof against malaria. They even dread visiting the plains, where they say that they suffer severely from fever. To the east they are neighbours of the Mechís, a tribe of similar character living in the thickest part of the Tarái forest lying below eastern Nepál, Sikkim and Bhatán.

The Bhukás, a tribe somewhat similar to the Thárus, are found in the Tarái and Bhábar from the Pilibhít district on the east to Chánpur on the Ganges on the west, and a few scattered colonies also occur in the Dehra Dún. "They claim," according to Elliot, "to be Panwár Rájputs and assert that their chief, Udiyajt, was driven from house and home in a quarrel that he had with his brother Jagatdeo, the Rája of Dháranagar and came to dwell with a few dependants at Banbasa on the Sárda. Udiyajt had not been there long before his aid was solicited by the Rája of Kumaon, whose territories

¹ See, however, Wilson, I., 60, 181 : Beames' Elliot, II., 24 : Notice of Gorakhpur district, Gaz. VI. ² Stewart describes the Bhukasas of Bijnor thus :— "The members of the tribe are of short stature and very sparse in habit, in both respects somewhat exceeding the ordinary Hindu peasant of the district, from whom, however, they do not differ much in general build or in complexion. The eyes are small ; the opening of the eyelids being narrow, linear and horizontal (the inner angle not inclining downwards so far as observed) ; the face is very broad across the cheekbones and the nose is depressed, thus increasing the apparent flatness of the face ; the jaw is prognathous and the lower lip thick and the moustache and beard are very scanty." Some of these peculiarities are more marked in some individuals than in others, but one Bhukasa will always recognize another, though a Kumaoni says he only recognizes them when they speak. The features of the women are similar to those of the men. J. A. S. Ben., XXXIV., 1f., 150. Beames' Elliot, I., 20. Stewart shows that the tradition communicated to Elliot is certainly unknown to one great section of the tribe.

required defence against some of the neighbouring powers. Success attended the efforts of the Panwár, and the gratitude of the Rájá induced him to offer his defenders an asylum in his territories. Upon this they are represented to have left Banbasa and to have taken up their residence in their present abodes." We cannot accept this tradition, no more than that of the Khági Chauháns, who assert a descent from the true Chauháns. The Bhuksas are nothing more than an outlying Hinduised branch of the great non-Aryan family. In physique and habits they are allied to the Thárus and have nothing in common with the immigrant plains' tribes in Kumaon. There is no doubt that their settlement in the Tarái is of ancient date, for in the *Ain-i-Akbari* the name Bhuksár was given to the tract occupied by them up to a recent date. They are now in every respect in their habits and customs Hindus of the ordinary low caste type and employ Gaur Brahman purohits in their marriage and funeral ceremonies. Some are Sikhs and the wife follows the religion or *path* of her husband and the children that of their father. One of the Turái parganahs is called Nánaknatha after the great Sikh guru, and there is a Sikh shrine there as well as in Dehra and Srinagar. The Bhuksas bear an excellent moral character; they are inoffensive and peaceable as well as intensely indolent and ignorant. They have no arts or manufactures and live on the chase and a scanty cultivation. They are particularly fond of wild pig, and this may be one of the reasons why they change the site of their villages every couple of years. In some places they collect the wild forest produce, but in no systematic way. They also engage in gold-washing, extracting gold-dust to the value of a few hundred rupees a year from the auriferous sands of the Sona Nadi. They are slowly but surely dying out and now number only a few thousands. We shall now proceed with our examination of the remaining tribes in the records which we have quoted.

In the lists of the Mahábháráta¹ we find the Sakas in one place between the Vákrátapas and Videhas or people of Tírhút; again between the people of Mount Jamuna and the Nishádas or foresters of the Paropanisades, who lived west of the Indus; again between the Sálwasenis, a

Sakas.

¹ Wilson, VII., 165, 171, 179, 186.

people of the north-west Panjáb and the Kokarakas and once more in the Váyu Purána at Tusháras between the Patti or people of Piti and the Antacháras or borderers. We may gather from these statements that there were several colonies of this tribe in existence in the Pauránik times. They are the Sacæ of classical writers and the Indo-Skythians of Ptolemy. The language which they spoke was known as Sákári and in one enumeration follows the language of Berar and precedes that of Váhlíka.¹ Again it is called a *vihásha* or dialect of Prákrit with the synonym Chandálika and ranks with the Sábari, Abhíríka, Drávira and Utkali or the language of the people of Orissa. The Váhlíka elsewhere is said to be a language fit for celestial personages in the drama, the Sákári for Sakáras, Sakas and the like, the Sábari and Abhíríka for wood-cutters and leaf-gatherers, and the Paisúchi for charcoal-burners and by others for barbarous hill tribes. The grammarian Lakshmidhara enumerates the following as Pisácha countries where the two dialects of Paisáchi are spoken:—Pandya, Kekaya, Váhlíka, Sahya, Nepála, Kuntala, Sudhessa, Bhota, Gándhára, Haiva and Kanojana. Of these Pandya may refer either to the hill kingdom of the Pándavas or that in the Panjáb and the remaining names to the Himálaya and adjacent countries. A later writer gives as a generic epithet for the provincial dialects the term² “according to the manner of those who speak like Nágas.” This designation appears to have been derived from the writers on rhetoric who assign Sanskrit to the gods, Prákrit to men, and for the wild barbarous tribes scarcely deserving the name of men, such as the Chandálas, Abhíras, &c., the tongue of Nágas or serpents.

Though the use of the term ‘Nága’ in the extract quoted in the preceding paragraph may be strictly conventional, there can be no doubt that a race called Nágas existed to whom the hooded-snake was sacred. The Nágas were found in the plains and the hills, and in addition to the account of the Nága city already quoted we may mention their assembling with their king Takshak under the auspices of Indra to oppose the building of Indraprastha. The Nágas appear to have been a race of trans-Himálayan origin who adopted the snake as

¹ Muir, II., 48, 50.² Lassen in *Síd.*, 82.

their national emblem and hence gave their name to the cobra. Mr. Wheeler¹ writes of them :—

“ The seats of these Nágas were not confined to India, for they have left traces of their belief in almost every religious system, as well as in almost every country in the ancient world. They appear to have entered India at some remote period, and to have pushed their way towards the east and south; but whether they preceded the Aryans or whether they followed the Aryans is a point which has not yet been decided. In process of time these Nágas became identified with serpents, and the result has been a strange confusion in the ancient myths between serpents and human beings; between the deity emblem of the Nágas and the Nágas themselves.

The great historic fact in connection with the Nágas, which stands prominently forward in Hindu myths, is the fierce persecution which they suffered at the hands of the Brahmans: the destruction of serpents at the burning of the forest of Khandava, the terrible sacrifice of serpents which forms one of the opening scenes in the Mahábhárata, and the supernatural exploits of the youthful Krishna against the serpents sent to destroy him, are all expressions of Brahmanical hatred towards the Nágas. Ultimately this antagonism merged into that deadly conflict between the Brahman and the Buddhist which after a lengthened period of religious warfare terminated in the triumph of the Brahman. From these data it would appear that the Nágas were originally a race distinct from the Aryans and wholly without the pale of Brahmanism; that those who became Buddhists were either crushed or driven out of India during the age of Brahmanical revival; and that the remainder have become converts to Brahmanism and appear to be regarded as an inferior order of Kshatriyas. But there is a vitality in certain religious ideas which seems to render them immortal; and whilst the Nágas as a people have almost disappeared from the Indian continent, the worship of serpents, or a reverential fear of serpents as divine beings, is still to be found deeply rooted in the mind of the Hindu. The general question perhaps, properly belongs to the history of the Hindu religion;² but it should be distinctly borne in mind while considering every legend which seems to point to the Nágas.”

The earliest tradition regarding Nepál gives the name Nág Hrad or ‘ tank of the serpent ’ to the valley in which Kathmánda

is situated and makes it the residence of the Nágas in Nepál and Kumaon.

Karkotak, Raja of the Nágas, whose memory is still kept alive by an annual meeting for bathing and worship at the Tau-dah tank.³ Takshak also is said to have taken up his abode in the valley for a time, and here it was that he became reconciled to Vishnu through the good offices of the Bodhisatwa Aryá-lokiteswara. This legend apparently implies a compromise

¹ History of India, I., 147, 411; II., 650. ² See Ferguson's ‘ Tree and Serpent Worship; London, 1878. General Cunningham makes the ophiolatrous tribes of the Punjab a branch of the Nága race. See also J. B. B. R. A. S., No. 105, IX. 256 Ind. Ant. IV., 5. ³ Wright's Nepál, pp. 77, 85, 86. These are similar legends about Kathmánda.

between the followers of Buddha, the Brahmans and the snake-worshippers which curiously enough exists to the present day.¹ In Garhwál we have traces of the Nágas in the names of pattis Nágpur and Urgam and the universal tradition of their residence in the valley of the Alaknanda. At the present day Seshnág is honored at Pandukeswar, Bhekal Nág at Ratgaon, Sangal Nág at Talor, Bánpa Nág at Margaon, Lobandeu Nág at Jelam in the Níti valley and Pashkara Nág at Nágnáth in Nágpur. In the Dún, also, the Nágsiddh or Nágáchal hill is sacred to Báman Nág and in Kumaon we have the great Nág at Bastir in Mahar; Kodár Káliuág in Pungaraun; Bini Nág in Baraun; Karkotak Nág at Pandegaon in Chhakháta; Vásuki Nág in Dánpur; Nágdeo Padamgír in Sálam and numerous temples to Nágrája. The rock bearing the Asoka inscription at Kálsi in the Dún is popularly reported to mark the boundary laid down of old between the Nága Skythians of the hills and Hindustan. The Sakas are named in the list with the Nágas and were, as we shall see, also of Skythian origin, but belonged to a very much later immigration of that race in historical times. It may, therefore, be safely assumed that a branch of the Nága race was once the ruling power in these hills. Were these lists compiled at one time and did they represent the facts of one period, there would be much difficulty in attempting any solution of the inconsistencies which they apparently present; but when the main portion of the work can be shown to be the result of various hands at different times, we may fairly assume that the lists themselves suffered at the hands of successive editors.

The name 'Khasa' like the name 'Nágá' is of far too wide significance to be that of a single tribe and
 Khasas. its use at the present day to distinguish the cis-Himálayan people of Khas-des from the Bhotiyas is more generic than particular. In the Vishnu-Purána, Khasa is the daughter of Daksha, wife of Kasyapa and mother of the Yakshas and Rákshasas.² It is under the former name that the Khasas were known in the first century, for we find a translation of it applied to them as an epithet by Pliny. The name Khasa does not occur as the name of a people in the Vishnu Purána, but we have instead the

¹ It is not to be understood that Buddhism existed in Nepál at the time of the scenes represented in the Mahábhárata if they took place in the fourteenth century before Christ: Gasetteer, II., 60.

² Wilson, VII., 75.

names of the Yakshas,¹ who are attendants on the Adityas with the Rákshasas and Nágás, and are here relegated to the domain of fiction. The Yakshas were present with the Rákshasas and Nágás at the milking of the earth. Vaisravana or Kuvera,² the god of mineral wealth, is said to be lord of the Yakshas and to dwell on Kailás, and the Yakshas are also known as Grámanis. In the Mahábháratá the Khasas do not occur in the great list, but they are mentioned³ in the *Karna-parvan* as living in the Panjáb, between the Arattas and Vasátis. The Arattas and the people of the country of the five rivers are pronounced contemptible, and 'there a Báhika⁴ born a Brahman becomes afterwards a Kshatriya, a Vaisya or a Sudra and eventually a barber.' This statement would imply the existence of a well-known settlement of Yakshas or Khasas at an early period in the Panjáb. It was to Yaksha (Yakkha) artists that Asoka entrusted the building of his numerous Chaityas, and they were also employed by him as mercenaries in his army.⁵ In the time of Nágárjuna, Nága artists were employed. In the *Dipavansa*,⁶ the names of the Theros are given who converted 'the multitude of Yakkhas in the Himavat.'

In the *Váyu-Purána* the Khasas are one of the tribes that Sagara would have destroyed were he not restrained by Vasishtha,⁷ and in *Manu* they are, as we have seen,⁸ reckoned only as degraded Aryans of the warrior caste. In the *Varáha-sanhita*, the Khasas occur after the Kunáhas or people of Kunáor, the Cousé of Pliny. In the *Márkandeya-Purána*, the name Khasa is found between Ekapada and Suvarna-bhúmi, the Eka country and the golden land which we shall see hereafter is probably the *g-Nári-Khorsum* district of Tibet immediately to the north of Garhwál. There is a curious confirmation of this location in the story⁹ of the gold-digging ants first mentioned by Herodotus, who tells us that:—
 "Besides these, there are Indians of another tribe who border on the city of Kaspatyrus and the country of Paktyika; these people dwell northward of all the rest of the Indians and from them the men are sent forth who go to procure gold." Then he describes

¹ *Ibid.*, 285.

² *Ibid.*, VI., 122.

³ *As Rec.*, XV., 109.

⁴ *As-*

ton, p. 277. ⁵ *Ind. Ant.*, IV., 162. Sung Yu, the Buddhist Chinese traveller, mentions a temple sacred to Bhagvata built by Yakshas in Udyana: *Beal's Fa-hsian*, p. 196.

⁶ *Uddenberg's translation*, p. 159.

⁷ Wilson, VIII., 292.

⁸ *Ibid.*, X., 45, *see also*, p. 379.

⁹ Schöten on the gold-digging

ants, *Ind. Ant.*, IV., 226.

how this gold was thrown up by ants from their burrows. Now in a passage of the Mahábhárata, the Khasas are expressly mentioned amongst the northern tribes who brought presents to Yudhisbthira and amongst them were presents of *paipilika* gold so called because it was collected by ants—(*pipilikte*). This can only refer to the trade in gold dust with the miners of Thok Jalung in Tibet and indicates that at that early time the Khasiyas were the chief carriers or distributors. There is evidence to show the wide diffusion through an immense breadth of Asia of names having the apparently common root 'khas' or 'kho.' We find it in the names Khophene, Khoas, Khoaspes, given to rivers of the Kábul valley by classical writers and in the Hindu-kush and Kashkára of the country to the north. Colonel Wilford¹ in his curious paper on 'Mount Caucasus' attempts to trace the Khasas from Kashgár through Kashmír and Kumaon to the Khasiya hills in Asám, and without accepting his conclusion we may assume that the facts recorded by him bear out the general result of a very wide extension of a Khasa race in pre-historic times. We may connect with them Kissia mentioned by Herodotus as an old name of Susa, and Strabo² also calls the people of Susa, Kissii, whilst Diodorus³ and Quintus Curtius⁴ mention the Kossæi amongst the principal troops of Darius at Arbela. We may also connect with their name the Caucasus of Pliny and the Kasian mountains of Ptolemy as well as his Kasia regio. The Caucasus includes the mountainous country to the west of Kashmír and south of the Oxus and the Kasian range runs thence eastwards to Nepál. As noted⁵ by St. Martin:—"le nom des Khaça a été de temps immémorial une des appellations les plus repandues dans tout le massif Himálaïen." In the Ceylon archives, the name Khasa occurs⁶ amongst the tribes who submitted to Asoka in the third century before Christ, and from Táránútha we have the Tibetan version of Asoka's conquests in the following story⁷:—"In the Champarna kingdom which belonged to the Kuru race there was a king called Nemita who was descended from the Solar race. He had six sons born of lawful wives and besides them he had a son by the daughter of a merchant to whom he gave in appanage

¹ As. Res., VI., 455² Book V., ch. 3.³ Bk. XVII., ch. 14.⁴ IV., 46.⁵ Etude, &c., t. c p., 417⁶ Burnouf, introd. à l'Hist du

Buddhisme, p. 362.

⁷ La Comme's Vassilief, p. 46.

the town of Pátaliputra, as a reward for his victory over the people of Nepál who dwelt in the kingdom of Kasya and over other mountaineers." Here Nepál is mentioned as the Indo-Himálayan country best known to the writer who at the same time distinctly connects the name with the Khasas. In the 'Chronicles of Kashmír' we find¹ Khasa tribes occupying the deserted city of Narapur at a time 'when the country was full of Dáradas, Bhotiyas and Mlechchhas in the reign of Mihirakula, the great anti-Buddhist ruler, who reigned about 500 A.D. In the reign of Kshemagupta the Raja of the Khasas compelled the king of Kashmír to give up to him thirty-six villages. A Khasa was the favoured lover of the notorious Kashmíri queen Didda in the eleventh century and was probably of her own clan, for she was aunt of her successor, the son of Udaya, Raja of Sábi or Lohara, a small State near Abhisára. These Sábi Rajas claimed descent from Sáliváhana, who is synonymous with the Saka Raja who founded the Saka era. St. Martin states:—"On les (Khasas) trouve cités en plus de quarante endroits de la Chronique Kachmirienne, parmi les principales tribus montagnardes qui confinent au Kashmír." The natives of Kashmír are called Kashírus by their neighbours in the surrounding hill-states and the name Kashmír has undoubtedly connection with the tribe of Kashírus and not with the mythic Brahmin-unadé Kasyapa. Wilford records² that "when Parasuráma undertook to destroy the Kshatriyas, the Khasas who then lived in the plains fled to the mountains in confusion. Many went to Jalpesa and then ascended the passes." From the above it is clear that at a very early period the Khasas were the principal inhabitants of the regions to the west of Kashmír, of Kashmír itself and of the hill country as far as Nepál and of a considerable part of the plains. They formed an important section of the Indian population found in those tracts by successive invaders, and though now possessing a national existence in Kumaon alone can still be traced from the sources of the Kábul river to the Tista. The Khasas of the plains were driven to the hills, the Vindhya on the south and the Himálaya on the

¹ *As. Res.*, XV., 29, 76, 79: T. B. B. R. A. S., No. 24, p. 39. In the introduction regarding the creation of Kashmír, Jalodbhava is represented as "devastating the neighbouring countries Dárábhishára Jahunára, Gandhára and the territories occupied by the Sakas, Khasas, Tunganas and Máthavas."

² *As. Res.*, XIV., 394: Langlois, *Hasivastu*, I., 466: II., 364: London, 1824.

north, and it is precisely in these places that we find them at the present day. We now find Khasas in the Kashkára country at the head of the Kunar valley and in the tracts adjacent to Kashmír. The Kunets of Kulu are still divided into two classes called Khasiyas and Raos, and we have the Khasiyas again in Garhwál, Kumaon and Nepál. Away from the Himálaya, we probably have them along the Vindhyan range and in the Bikaner desert as nomadic tribes under the name Khosa, most of whom are now Muham-madans. Tod¹ makes these Khosas a branch of the Sclhráes. They occur again as Musalmáns in the desert around Thar and Párkar in Sind and in Biluchistán under the same name Khosas,² and are particularly numerous between Bakhar and Shikárpur. The local tradition is that they entered Sind with the Kalhoras and after the fall of that dynasty they settled about the desert between Márwár and the valley of the Indus. That these Khosas belong to the same race as the Khasiyas of Kumaon is not a mere sugges-tion, but is corroborated by the fact that the dialect of Hindi now current in Kumaon has its closest affinity with the dialect spoken in Márwár and the adjoining parts of western Rájputána³ and not with that spoken in the Gangetic plains and Rohilkhand. We have also sporadic colonies of Khasas and Doms in Orissa and Chutiya Nágpur.

We need not give evidence of the kind that we have collected
 Khasiyas are Hindus. more importance than it deserves, but there seems no reason for doubting that the Khasas were a very powerful race like the Nágús who came at a very early period from that *officina gentium* Central Asia and have left their name in Kashgar, Kashkára, the Hindu-kush, Ka-hmir and recognizable colonies at the present day in the hills from Kashmír to Nepál and in various parts of the plains and that the Khasiyas of Kumaon are of the same race. The account that the Khasiyas of Kumaon give of themselves tallies in all respects with the indications from other sources. They always profess to be Rájputés who have fallen from their once honorable position by the necessity of living in a country and in a climate where the strict observance of the ceremonial usages of their religion is

¹ Tod's Rajasthan, Reprint, II., 190, 280, 293.
 Reprint, II., 252; J. R. G. S., IV., 109. *Ibid.* XIV. 207; Pagan's Personal
 Observations on Sind, p. 41. Hughes' Gazetteer of Sind, p. 327.

² Trans. Bom. Lit. Soc.,
 Observations on Sind, p. 41. Hughes' Gazetteer of Sind, p. 327.

³ Kel-

logg's Hindi Grammar, p. 66.

impossible, and undoubtedly this statement is supported by all the facts, so far as we are acquainted with them, which have any bearing on the question. It has been sometimes but hastily assumed, apparently from analogous circumstances in Nepál, that the Kumaon Khasiyas are a people of mixed Tibetan and Indian race. The Khasiyas¹ of Nepál may have been less exposed to Aryan influences throughout their successive wanderings or may have been modified by admixture with Tibetan tribes. For as we proceed eastwards from the Káli we find, as has already been noticed, conditions of climate which however unlike those of Tibet must still be less antagonistic than those of the western Himálaya to the diffusion of a Mongolian race. But this admission does not affect the Khasiyas of Kumaon, who in physiognomy and form are as purely an Aryan race as any in the plains of northern India. The language of the Khasiyas, as will be shown hereafter, is a purely Hindi dialect both in its vocables and in its grammatical structure, and no signs of foreign admixture have hitherto been discovered in it. Supposed resemblances in feature between the Khasiyas and the neighbouring Tibetan tribes have helped to lead some to a conclusion different from that now given, but this resemblance has no real foundation in fact. The people of the plains no doubt differ greatly in appearance from those of the hills, but not more so than might be expected when we consider the great difference in the physical conditions of the countries that they respectively inhabit: nor more than the Aryan races of the plains owing to similar causes differ amongst themselves. The moist climate of lower Bengal, the comparatively dry climate of the North-Western Provinces and the still drier climate of the Panjáb with its great extremes of heat and cold cause those physical changes in the inhabitants that are so remarkable and clearly recognisable by the most casual observer. If to the effects of climate we add the influence of the various races who have from time to time invaded India we shall have reason to believe that much of the variation observed in the plains is due to circumstances which have been wanting in the hills. However this may be, this much at least is certain that, at the present time, the Khasiyas of Kumaon and Garhwál are in all respects Hindus. They are so in language, religion and customs

¹ Mr. Dames' derivation of the name from the Arabic 'Khas' is entirely untenable, J. R. A. S., IV., 172.

and all their feelings and prejudices are so strongly imbued with the peculiar spirit of Hinduism that although their social habits and religious belief are often repugnant to the orthodox of that faith, it is impossible for any one who knows them to consider them other than Hindu. Year by year with increasing communication with the plains, the hill Hindu is more and more assimilating his practice with that of his co-religionists in the plains, whilst to the north, the Tibetan Bhotiyas are becoming more observant of Hindu customs.

Kashkára occurs amongst the countries to which the ancient Khasa race has given a name. It is properly the name given to the States in the upper Kator.
Kunar valley known now as Chitrál, Yassan and Mastúj from their principal towns. The ruling princes of these States still belong to the Kator family, the Kashwaktiya branch in upper Chitrál including Yassan and Mastúj and the Sháh Kator branch in Chitrál proper. The people there now speak a dialect in which there are many Persian vocables, but we have not sufficient evidence before us to show what the real nature of their language may be. If, as is probable, it be one with Dárd spoken by the adjoining races in Gilgit and Astor it is an Aryan language. From the inscriptions noticed hereafter we find a dynasty known by tradition as Katyúri in the Katyúr valley of Kumaon, certainly from the eighth to the sixteenth century and forming the stock of numerous petty principalities in these hills, and possibly we may look to the Khasiya Katuras of the trans-Indus highlands for the origin of these Kumaon Khasiya Katyúris. Mr. Thom's¹ and Sir H. Elliot² have suggested a connection between the Kators of the mountainous region beyond the Indus and the Kumaon Katyúris. There is certainly a striking similarity in sound between the two names, but, as we have often had occasion to remark, a coincidence of this kind is frequently merely accidental and more commonly delusive. There is a marked difference observed in the Pauránik records between the Sakas and the Yavanas and the tribes classed as Nágás, Khasas and Kirátas, still they are all reckoned as Vrishalás, beyond the pale of Aryan concern, though some are recognised as of Aryan race. We have also shown that a race once occupied Garhwál

¹ J. R. A. S., IX., 177.

² Dawson's Elliot, II., 408.

who were connected in religion and perhaps in race with the Nágás, and we may also notice the name Nacra Somton, in d'Anville's reproduction of the native map of China, for the tract between the Karnáli and the Ganges and Sanke Somtou for that lying to the west of the bend of the Satlaj. Tradition certainly assigns the Katyúris to the solar division of the Kshatriya race, but we know the assimilating influences of Hinduism as they work before us, frequently manufacture the four castes out of the existing material found in such wild countries as Kumaon and assign to sun-worshipping tribes the attributes of the Kshatriyas of the solar race. Even at the present day the proselytising of the non-Brahmanical tribes is going on and the wealthier amongst the converts are received into and intermarry with the so-called Rajpút tribes of the hills. There is therefore no insuperable obstacle to the reception of the suggestion of Mr. Thomas and Sir H. M. Elliot, and proceeding from such distinguished scholars it certainly merits some investigation at our hands.

The passage referred to in Elliot is as follows:—“The identity of the name and the period of the establishment of the Kators (*sic*) in Kumaon appears to render it possible that we have in them the descendants of those Kators' who fought under the banners of the first Muhammadan conquerors.” Kanak or Kank was the last of the Katorman kings of Kábul according to the Musalmán historians, and the same name heads the list of local kings in Garhwál according to several authorities. Elliot cites the following passage from a copy of the *Jámi'ut-tawárikh*:—“After Búsdeo from among their rulers (*i. e.* of the Indians) one was Kanak, and he was the last of the Kayormán kings,” and Búsdeo is also the eponymous founder of the Katyúri house of Joshimath in Garhwál. Kanak of Kábul had a Brahman minister named Kalar who slew his master and founded a new dynasty of which the names of many members survive. Abu Rihán Al Birúni makes the Kábul dynasty to be of Turkish extraction and states that before the death of the last of the line some sixty generations had sat on the throne of Kábul.

We may assume, with Elliot, that the statement does not imply that the supreme power during this period remains in the same

family, but rather that the dynasty belonged to the same stock, whether Baktrian, Saka, Yueh-ti or Parthian. If we allow fifteen years for each of the sixty reigns preceding the murder of Kank we arrive at the middle of the first century before Christ for the establishment of the dynasty, or about the time of the rise to power of the Yueh-ti branch of the great Skythian race. We have to show that besides the Skythian immigrants to whom the princely power belonged there was an indigenous Indian population in the Kábul highlands, and that this people can be reasonably connected with the people inhabiting the upper valley of the Kunar river at the present day, and that there are grounds for considering that both the subject Indians and the ruling Skythians moved eastwards, and that the former may be one with the Khasiyas and the latter one with the Katyúris of Kumaon. With regard to the Khasiyas we have nothing to add to the arguments already adduced to show that they belong to the great Khasa race.

The name 'Saka' is given to a race of Skythian origin, for whom more accurate information is obtainable from Greek, Roman and Chinese writers and the researches of numismatists. Still in the Indian records there are so many allusions to them that we cannot pass them over in silence. So much had they influenced Hindu writers that in the Pauránik cosmogony they are given a 'dwípa' or island to themselves,¹ situate between Krauncha and Pushkara in the Vishnu Purána, and by other records placed in a somewhat different relation which it is unnecessary to discuss here. Bhavya became king of Saka-dwípa and its divisions were named after his sons Jalada, Kumára, Sukumára, Manivaka, Kusumoda, Mandáki and Mahádruma. The mountains and rivers 'that wash away all sin' are mentioned and the castes of the different classes, the Mriga of the Brahman,² the Mágadha of the Kshatriya, the Mánasa of the Vaisya and the Maudaga of the Sudra and 'by these Vishnu is devoutly worshipped as the sun.' Is it only a coincidence that the name 'Kumerq' (Komaro) occurs on the coins of the Indo-Skythian rulers of Kashmír, and in other early Indo-Skythian inscriptions and that the sun-god was the favourite deity of many of them? We have

¹ Wilson, VII. 199.

² Cf. the great emigration of Maga Brahmans from the trans-Indus region to India and the Macca Kalinga Brahmins of Ptolemy in the valley of the upper Ganges.

shown how the name 'Saka' occurs in the Pauránik records,¹ the Mahábhárata² and Manu,³ and add the following texts not before cited. The *Brahma-Purána* and *Hari-nansa* make the descendants of Narishyanta, son of the Manu of the present period, Sakas.⁴ In the *Bhaviṣya* chapter of the *Váyu-Purána* the Sakas are mentioned as among the royal races,⁵ and in the *Vishnu-Purána* it is recorded that "after these (Andhrabhritya kings) various races will reign; as seven Abhíras, ten Gandhabhillas, sixteen Sakas, eight Yavanas, fourteen Tusháras, thirteen Mundas, eleven Maunas, who will be sovereigns of the earth 1,399 years and then eleven Pauras will be kings for 300 years. When they are destroyed the Kailakila⁶ Yavanas will be kings, the chief of whom will be Vindhya-ákti; his son will be Puranjaya; his son will be Rámchandra; his son will be Dharma, from whom will be Varánga and others (five) who will rule for 106 years. From them will proceed thirteen sons: then three Báhlkas and Pushpamitra and others to the number of thirteen will rule over Mekala." This remarkable passage shows us the Abhíras and Gardhabhillas as predecessors of the Sakas. The Abhíras, as we have seen,⁷ lived near the Indus associated with the Baktrian Greeks and Indo-Skythian inhabitants of the same quarter. The *Matsya-Purána* reads 'Húnas' for 'Maunas' and Wilford⁸ considers the Maunas or Mundas to be the same as the Mandei of Pliny and Murundai of Ptolemy and to be also reckoned with the Húnas. In a Jaina legend⁹ referred to hereafter Gardhabhilla is made sovereign of Ujain and was deposed by a Sáhi or Suka noble and the Kailakila Yavanas are identified with a Grecian dynasty that ruled in Vákátaka, to the south of Haidarabad. These statements are so comprehensive that there is no necessity for further extending them by collecting the numerous similar references in other works, and we shall now proceed to examine some of the notices regarding the Baktrian Greeks and Indo-Skythians, recorded by Greek, Roman and Chinese writers.

We have now to examine more closely the history of the region
 Greco-Baktrian kingdom to the west of the Indus and show the links
 of Kábul. in the chain of evidence that connects it with

¹ *Antea*, p. 347.
² *ibid.*, VIII, 14, 336.
³ *Antea*, p. 337.
 R. A. S., IX, 139.

⁴ *Antea*, p. 337.
⁵ *Ibid.*, IX, 134.
⁶ *Cf. Conn. Arch. Geogr.*, p. 367.

⁷ *Antea*, p. 279.
⁸ J. B. B. R. A. S., VIII, 268.
⁹ J. B. B.

the history of Kumaon. The Greek and Roman geographers¹ give us the materials from which we can judge of the condition of the Indus region in the time of Alexander, and the coins of Alexander's successors afford us means by which we may fill up many details² for which other records are wanting. On the death of Alexander in Babylon in B. C. 323, India comprised the three satrapies of the Paropamisadæ, the Panjáb and Sind. The first lay to the west of the Indus and extended to the highlands in the neighbourhood of the Kábul valley.³ Its name recalls to our memory the Nishadha mountains of the Pauránik geographers, and refers not only to the Hindu-kush, but also to the western prolongation in the Koh-i-Bába and Paghmán ranges.⁴ The inhabitants of the valleys of the Kábul, Panjshír, Nijrao, Tagao, Alingar Kunar and Swát streams to the confluence of the Kábul river with the Indus were all known as Paropamisades or Paropanisades. Commenting on the statements of the geographers in this respect Lassen remarks that :—

“ We meet between the Paropamisades and the Indus a series of independent, warlike mountaineers, under their chieftains, separated into many smaller tribes, rich in flocks and herds ; they are always called Indians, though no mention is made of either institutions characteristic of India or of Brahmans. This is doubtless correct, for they are the inhabitants of the Indian frontier, not exactly regulated by Indian customs, outcasts of the soldier caste, as the Indians might term them.” Ptolemy makes the Koas or Kunar stream the principal river of the Kábul valley and does not mention the Kábul or Kophen river at all. The Koas joins the Indus and the Swát river or Suastus, from which the adjoining

¹ See Further points in the history of the Greek and Indo-Skythian Kings in Bactria, Cabul and India, by Professor Lassen ; ed. Roer, Calcutta, 1840. Cunningham Arch. Rep., II., 61. References in Dowson's *Elliot, II.*, 403. *Gazetteer, N.-W. P., II.*, 185, s. v. 'Saháranpur district.' ² Coins of Alexander's successors in the East, the Greeks and Indo-Scythians, by General Cunningham. *Num. Chron.*, Vols. 8-10. *Die Nachfolger Alexanders der Grossen in Baktrien und Indien* von A. von Sallet: Berlin, 1879. *Wilson's Ariana Antiqua*. Thomas' *Princep and Miscellaneous Essays*, and *Ind. Ant.*, IX., 256, note. ³ The chief cities were (1) Orto-pana or Kabura or Kabul, the people of which were called Kábolitæ by Ptolemy ; (2) Alexandria ad Caucasum or Alexandria Opiana identified with Opán, 56 miles to the north of Kábul ; (3) Kartana or Karsana also known as Tetrágonis and identified with Bégrám, 27 miles to the north of Kábul ; (4) Nagara or Dionysopolis, the Bégrám near Jalalabad ; (5) Peukelaotis or Peukelas (Pashkala), Hashtnagar on the lower Swát river ; (6) Embolima or Ohind on the Indus at its junction with the Kábul river, the Útakhanda of the Chinese Buddhist pilgrims ; and (7) Aornos, the ruined hill-fort of Réniyat above Nograu. ⁴ For a good map see *Proc. R. G. S. I.*, 110 ; also *Cun. Anc. Geog.*, 17.

district was called Suastene, joins the Koas. Under the sources at the Koas lived the Lambagæ (Lampatæ), the people of modern Lamghán. As we shall see, the Káfirs, to the present day, extend from Lamghán through Káfiristán to the Kashkára mountains. A recent traveller who saw the Musalmán Kashkáras and the pagan Káfirs together in Chitrál could observe no such marked distinction between them as to justify us in believing that they belonged to different races. The Káfirs, however, speak a language based on Sanskrit, whilst their Musalmán neighbours, of necessity, have admitted a number of Persian vocables. For the latter, Persian is the language of civilisation and commerce, and in the same manner as a similar influence in India has added to the Hindi vocabulary there, Persian has materially influenced the original speech of Kashkára. According to Ptolemy, the Kunar was the most westerly river of India proper, but he does not make it the western boundary, for the Lambagæ who occupied the country for a whole degree to the west of that river are still reckoned as Indians. The district of Gandhára lay between the Swát river and the Indus and below the Lambagæ and Suastene lay Gornaia, which may be identified with the tract known as Gugiana on the lower course of the Kunar river and Bajaur, including Jandúl and Talásh at the junction of the Landái and Swát rivers. From the above summary we may fairly assume that the country now known as Kash-kára and inhabited by a distinct race was in the time of Alexander regarded as a part of India and was then inhabited by Aryan races however heterodox they may have been.

It is unnecessary for our purpose to notice the Indian satrapies of the Panjáb (Pentapotamia) and Sind. The other provinces of the eastern empire were Ariana and Baktriana. The former comprised Aria and Drangiana under one satrap and Gedrosia and

Brief sketch of Bak-
trian history. Arachosia under a second satrap. Baktria

Sogdiana and Margiana were included in Baktriana under one satrap. On the death of Alexander, his officers distributed the older territories and the new conquests amongst the most powerful of their number. Alexander's half-brother Arrhidæus and his expected son by Roxana were declared joint sovereigns. It is worthy of remark that amongst the kings of Baktria whose coins have been discovered some twenty-eight

names occur that are also found amongst the names of the companions of Alexander and the Diadochi that have been handed down to us by the Greek historians, so that we may regard the Baktrian kings as descendants of the chiefs who accompanied Alexander in his eastern campaign. At the conference of the chiefs, Oxyartes, the father of Roxana, was appointed satrap of the Paropamisadæ. Eudemus was already military governor of the Panjáb and the civil rule was left in the hands of the native chiefs. Pithon, the son of Agenor, became satrap of the delta of the Indus: Stasanor and Siburtius held Ariana and Baktriana was committed to Philip. An empire not yet consolidated and now broken up into so many petty satrapies soon fell into disorder. In B. C. 317 we find Eudemus, Oxyartes and Stasander, who had succeeded Stasanor in Aria, assisting Eumenes in his war with the Syrian king Antigonos, whilst Siburtius and Pithon espoused the opposite side. Antigonos was successful and from B. C. 316 to the defeat¹ of his son Demetrius by Seleukus Nikator in B. C. 312 his sway was acknowledged through Ariana and Baktriana. In India, Chandragupta of Patna had taken advantage of the departure of Eudemus to make himself master of the Panjáb and perhaps also of the Kábul valley. After Seleukus had firmly established himself at Babylon, he took the first opportunity that presented itself to reconquer Ariana and Baktriana and was preparing to wrest the Indian province from Chandragupta when disturbances elsewhere led him to believe that it would be more prudent to secure the Indian prince as an ally. Accordingly Seleukus surrendered the province of India to the Palibothran prince and appointed Megasthenes to reside at Patna as his ambassador. These friendly relations continued under the sons of both kings Amritajata (Amitrochates) and Antiochus Soter, who also sent Daimachus as his representative to the court of Patna. Antiochus Soter succeeded his father in B. C. 280 and died in B. C. 261. Antiochus II. surnamed Theos succeeded and died by poison in B. C. 246, when his son Seleukus Kallinikos became titular ruler of the east. Two years previously the Parthians had revolted and established a kingdom and an era of their own, and at the same time Diodotus proclaimed his independence in Baktria. Diodotus I. was succeeded by his son

¹ Whence the era of the Seleukidæ.

Diodotus II., who reduced Agathokles, satrap of Arachosia, and Antimachus, satrap of the Paropamisadæ, to subjection and they acknowledged fealty to him by placing his name on their coins. These changes must all have taken place subsequent to the death of Asoka, whose edicts contain the names of Antiochus, Ptolemy, Antigonus, Magas (of Cyrene), and Alexander (of Epirus), but make no allusion to the rebel leaders. The faction of Diodotus did not long enjoy their accession to power, for in a short time a Magnesian leader by name Euthydemus succeeded in expelling Diodotus from Baktria. We know nothing more of Baktria until we come to the eastern campaign of Antiochus III. (B. C. 212-205). After reconquering Media, Parthia and Hyrkania, Antiochus made peace with the Parthian Arsakes and proceeded to the invasion of Baktria. Euthydemus, however, was able to place himself in a position which obliged his antagonist to come to terms. He then urged that Antiochus had no reason for attempting to deprive him of his kingdom since he had never rebelled against Antiochus, but had only obtained possession of Baktriana by destroying the descendants of those who had before revolted. His son Demetrius carried further messages, and the result was that Antiochus accepted the peace that was offered and cemented the friendly relations with Baktria by betrothing his daughter to the son of Euthydemus. Antiochus then left Euthydemus in possession of Baktria (B. C. 208) and proceeded in person southwards to India. There he concluded a treaty with Sophagenus, the king of India, and in return for a number of elephants confirmed the Indian in the possession of the Paropamisadæ and the other Indian satrapies. Antiochus had hardly reached his headquarters when Euthydemus, deeming it to be a favourable opportunity, marched southwards and annexed the cis-Himalayan districts to Baktria. This conquest was consolidated by his son Demetrius, who is styled "king of the Indians" by Justin, and whose authority extended from the sources of the Oxus to the delta of the Indus and from the Caspian Sea to the Satlaj and along the coast from the Indus as far as Gujrát. This statement is corroborated by the number and find-spots of the coins of his father and of himself. The variations in the portrait of Euthydemus on his coins show that he must have had a long reign, not less than thirty years

according to General Cunningham.¹ Up to the time of Euthydemus, the Greek princes used Greek legends only on their coins, but from the accession of his son Demetrius all the Greek princes of India and Ariana, over thirty in number, used the Indian language and a character, happily termed Arian, on the reverse of their coins. This character is, according to Mr. Thomas, akin to the Phœnician and is written from right to left, like all other alphabets of Semitic origin.² If Mr. Thomas' suggestion³ be correct that in certain letters on a coin of Eukratides he has discovered the Seleukidan year 173, or B. C. 138, and on one of Plato Sel. 147 or B. C. 165, and on one of Heliokles Sel. 183 or B. C. 128, we shall have much to alter in the present arrangement of the Græco-Baktrian princes known from their coins alone.

We know that Demetrius was old enough in B. C. 208-7 to have been employed as his father's agent in the negotiations with Antiochus, and allowing him forty years, we have the year B. C. 167 for his death and the accession of Eukratides, who according to Mr. Thomas' discovery minted coins in B. C. 138. There is no doubt that Eukratides succeeded Demetrius in Baktria, but may have left his rival in possession for a time of the Indian provinces. Justin tells us that:—"*eadem ferme tempore sicuti in Parthis Mithridates ita in Bactris Eucratides magni uterque viri regnum ineunt;*" referring to the rise at the same time of Arsaces VI., better known as Mithridates I., king of Parthia and Eukratides. Mithridates reigned⁴ from 173 to 136 B.C. and is represented as the avenger of the murder of Eukratides. Even granting that the coin of Eukratides bearing the supposed date B. C. 138 was the last issued in his reign, for which numismatic evidence based on a comparison of the portraiture and devices is wanting, the remaining events of Mithridates' reign, including the expedition to India and his war with the Syrian king Demetrius, can hardly be brought into two years. According to Clinton,⁵ Demetrius made his preparations in B.C. 140 and entered Parthia in July, 139, and was captured at the beginning of 138, or according to General Cunningham⁶ in B.C. 139. In either case the

¹ Num-Chron., n. s., IX., 129.

² *Ibid.*, III., 229.

³ J. R. A. S., IX.,

1; see also Dr. Hornle's paper in Ind. Ant., VIII., 196.

⁴ Lassen, Bactrian

coins, &c., p. 155, and 'A view of the history and coinage of the Parthians by J. Lindsay, p. 7: Cork, 1852.

⁵ East. Hell., III., 331.

⁶ Num. Chron., X., 232.

death of Eukratides took place at least two years previously, for we must allow that time to have elapsed in preparation for the Indian expedition, the stay in India and return of Mithridates to Parthia. We must place, therefore, the death of Eukratides in B.C. 141-40, and consequently either the date on the coin is wrongly read or the mints went on coining after the death of Eukratides in his name, or the dates given as those of Demetrius' war with Mithridates are incorrect or the initial year of the Selenkidan era is wrongly placed. These are points that cannot be discussed here. During his expedition to India Mithridates is said to have subdued the country between the Indus and the Hypanis and was stopped in his onward march by news of the preparations made by the Syrian king. He returned to Parthia, annexing the old Bactrian satrapies west of Arachosia on his way, and probably left the Bactrian satrapies in the Indian region to those in whose hands he found them. Both Mithridates and Eukratides in the earlier years of their reigns were much harassed by the incursions of the Skythians and Sogdians, and it was only when he had rest from them that Eukratides was able to turn his attention to India. Whilst returning from an expedition in which he penetrated India as far as the Satlaj he was murdered by his son, 'who had been associated with him in the sovereignty.'

The name of the parricide is nowhere given, but General Cunningham considers that he must be one with Apollodotus, who is named in several passages of importance in connection with Menander in terms that would imply that they had much to do with the extension of Greek influence in India. Indeed the coins which from numismatic evidence alone are assigned to a date following close on or contemporary with the coins of Eukratides indicate a marked departure from those that preceded them. The coins of the predecessors of Eukratides and even of Eukratides himself were minted by Bactrian kings, though in many cases giving bi-lingual inscriptions; but we now come to a series of kings of whom there is evidence to show that their home was in India and that any extension of their power was made westwards from India up the Kábul valley and who were more Indian than Greek in their habits. General Cunningham would include in this category the names of Antimachus

Nikephoros, Philoxenus Aniketos, Nikias Soter, Lysias Aniketos, Antialkidas Nikephoros, Theophilus Dikaïos, and Epander Nikephoros, who are known to us solely from their medals. Undoubtedly the death of Eukratides was the signal for disorder and his lieutenants everywhere hastened to carve out kingdoms for themselves. Those in Baktria were overcome by the Sakas, but for some time the cis-Himálayan satrapies remained in the hands of the Greeks. We must place the great expeditions of Apollodotus and Menander after the death of Eukratides (*i.e.*, after B. C. 140)¹, the former through Gujrát and Ajmere perhaps as far as Ujain and the latter through the Panjáb to the Jumna and thence through Oudh to the city of Patna. The number of the coins of Eukratides and the variety in their find-spots shows that he must have been one of the most powerful of the Baktrian kings; and the coins of Apollodotus and Menander, his successors, on numismatic evidence are comparatively as common. Strabo states that Menander crossed the Hypanis and penetrated eastwards as far as the Isamus,² and the author of the 'Periplus of the Erythræan Sea' notes that "even in his time³ ancient drachmas were current at Barygaza (Broach) bearing in Greek characters the stamp of the kings Apollodotus and Menander who reigned after Alexander." In the epitome of Trojus Pompeius, also, the exploits of the Indian kings Apollodotus and Menander are referred to, so that it is probably to their expeditions that much of the local knowledge of the Yavanas proper is due.

The coins bearing Greek inscriptions belonging to this time illustrate the state of the country. Most are of such a character as to indicate their common origin in time and type. The number of names show that there were several petty states and that after the death of Eukratides there was no single ruling family to whom all acknowledged allegiance. There are few indications to show the relation of these princes towards each other or the order of succession. We may perhaps, however, assign the Apollo series to Apollodotus, as we find the standing Apollo with a tripod on the reverse on his coins, which are closely imitated by Straton, Dionysius, Hippostratus and Zoilus,

¹ Apollodotus is supposed to be Bhagalatta, sovereign of Málwár. Weber, *Hist. Ind. Lit.*, p. 181. ² Not identified: Lassen agrees that Jomana (Jumna) may have to be read: Wilford suggests the Rámaganga under the name Suráma. ³ 290 A.D. according to Reinaud.

who may either be successors or lieutenants of Apollodotus: all bore the title 'Soter.' We now come to a class of coins consisting of degraded imitations of the pure Buktian type with barbarous names of Indian and Parthian origin, of which those of Maues may be taken as the type. We have seen that the Parthians had occupied the country to the west of Arachosia, and they now seem to have advanced eastwards to India, for several of the earlier of these barbarian names may legitimately be referred to them. The type of the legends and figures on the coins of Maues at first approaches that of the coins of Demetrius, then we have imitations of the Apollo series and again the purely barbarian style. On some there are imitations of the horse and bow and quiver of the Parthian coinage.¹ Connected with the medals of Maues are those of Azes, which closely imitate the former, and from their number and the localities in which they are found show that he must have attained to considerable influence. We have coins of Azes with the names of his generals Aspapati and Asvavarma: a Vonones with Spalahara and with Spalagdama, also a Pakores and Abdagases, all of which indicate a Parthian origin.

It is difficult to decide when the use of the Greek language ceased in upper India, for we learn that the Indian embassy² to Augustus (B. C. 22-20) brought with them a document in Greek, written on parchment and purporting to be a communication from Porus or

¹ General Cunningham suggests that Maues was a leader of a tribe of Dahæ Skythians called Meds and represented by the Mers of the present day: Arch. Rep., II, 59. The Meds are mentioned by Ibn Khurdâdha as robbers at the end of ninth century: Dowson's Elliot, I, 15. There is much to be said in favour of an early Parthian settlement in the Indus delta. Táránátha in a curious passage (La Combe's Vassilief, p. 51) tells us that in the time of the Magadha King Darmachandra, the Turushka King was ruling in Kashmir and at Multán and Lahore the Persian (Parthian) King Hunimanta, who attacked Darmachandra and subdued Magadha and demolished its temples. The priests fled and Darmachandra died and was succeeded by his son Kanakachandra; who found himself a tributary of the Turushka. His cousin Buddhapaksha, who reigned in Benares, slew Hunimanta in battle and restored the law of Buddha, and under this king the Nalanda temple was destroyed and with it the records of the Maháyána school. Although there is no evidence to show that Nahapána of Gujrát was a Parthian as supposed by some (J. B. R. A. S., VIII, 283; IV, 1, 139). Gotamiputra takes credit for his victories over Sakas, Yavanas and Palhavas or Parthians (Parthavas), and amongst them the successor of Nahapána. The author of the 'Periplus of the Erythrean Sea' distinctly remarks of the Indus delta that the Indus had seven mouths, on the principal of which was Barbarikon, a trading seaport. 'Before this town lies a small islet and behind it in the interior is Minnagar, the metropolis of Skythia, which is governed however by Parthian princes who are perpetually at strife among themselves, expelling each the other' (Ind. Ant., VIII, 139). Arrian (150 A. D.) places the Astakenoi and Assakenoi to the west of the Indus as far up as the Kábal river, and these were formerly subject to Assyria and then after a period of Median rule submitted to the Persians (*Ibid.*, IV, 85). ² J. B. R. A. S., XVII, 309.

Phor as he is called in the local records. We know that writing on parchment was not an Indian custom, though it is reported of the people of An-sik (Parthia) as early as B. C. 120 by a Chinese author,¹ and therefore we may reasonably identify Porus with one of these barbarian Parthian kings. Again, according to Apollonius of Tyana, Greek was spoken in the Panjáb even by villagers² up to the middle of the first century after Christ. Our estimate of the state of the country west of the Indus is further confirmed by the statement of the Chinese author regarding Sarangia that the inhabitants were very numerous and were continually electing petty sovereigns, and that therefore Parthia took the country under its protection. There is nothing to show that at this time (first century before Christ) there was one paramount power in upper India, but that on the other hand there were numerous petty principalities of Baktrian or Parthian origin is abundantly proved from the coins. These gradually show less and less of Greek influence until we come to the Kadphises series, but here we may conclude our researches into the history of the Yavanas pure and simple, for we can identify the author of the Kadphises group with the immigrant Skythians and Turks. We shall, however, add the references to the Yavanas in the local records to complete the subject.

In the *Vishnu Purána* the Yavanas are said to be sprung from Turvasu and, as we have seen,³ are placed to the west of Bhárata. They occur between the Mlechchhas and Chinas in the list of the Mahábhárata,⁴ and are also one of the nations that Sagara was about to destroy when prevented by Vasishtha. In the chapter

Yavanas in the *Hiada* on the future kings of India in the Vishnu records.

Purána, eight kings of the Yavanas are placed between the Sakas and Tusháras⁵ and the Váyu gives them a reign of 82 years, and there was also a dynasty of Kilakila Yavanas.⁶ Some records call them Yavanas in religion, manners and polity, and the *Bhágavata* mentions the names of five of their princes Bhútananda, Vangiri, Sisunandi, Yasonandi and Pravíraka. The *Váyu* makes Pravíra, a son of Vidhyasákti, who reigned in

¹ *Ibid.*, X., N. S., 298.

² *Ibid.*, XVII., 78.

³ *Antea*, page 357.

⁴ *Antea*, page 358.

⁵ *Antea*, p. 384.

⁶ Identified by Mr. Bhau Dáji from the Ajanta inscriptions with a dynasty ruling in Váákataka, a province between the Bay of Bengal and the Sri Sails hills south of Haidarabad, and who ruled in eastern India shortly after the Sáhas. J. B. R. A. S., VII., 63; VIII., 248.

Kánchansapuri. The founder of the Sunga dynasty in Magadha is said to have engaged in conflict with the Yavanas on the Indus.¹ In a passage of the Mahábhárata translated by Wilson² it is stated that "all countries have their laws and their gods; the Yavanas are wise and pre-eminently brave." They are mentioned in the edicts of Asoka and in the Allahabad inscription of the Guptas. Pánini refers to 'the writing of the Yavanas' in illustration of one of his grammatical rules, but we are not in a position to fix his date.³ But it is from their influence on the writings of the Hindus, and especially on the works devoted to astronomy, that the extent of their relations with India may be gathered. The Indian astronomers write of the Yavanas as their teachers.⁴ Varáha-mihira, who lived in 504 A. D., gives not only the entire list of the Greek names of the zodiacal signs and planets, but he also directly employs several of the latter side by side with the Indian names as well as translations from the Greek of technical terms. It is unnecessary to continue our search after the allusions to the Yavanas in the Hindu records, and we shall merely add the following references collected by General Cunningham.⁵ In the *Milinda-prasna*, or 'Questions of Milinda,' there⁶ is a long disputation between Nágárajuna and the Yavana Milinda, raja of Ságala. The time and place lead us to identify this prince with the Greek Menander, raja of Sákala or Sangala⁷ in the Panjáb between the Chináb and the Ravi. Dr. Kern quotes a fragment of the *Gárgi-sanhita* of the astronomer Garga written about B.C. 50, in which after mentioning Sálisuka, one of the Maurya princes who died in B. C. 200, Garga says:—"Then the viciously valiant Yavanas, after reducing Sáke-ta, Panchála, Mathura, will reach (or take) Kusumadhwaja (Palibothra), * * * Pushpapura (Palibothra) being reached (or taken), all provinces will be in disorder assuredly." Sáketa is Oudh, Panchála we have already explained,⁸ Muthra was the chief city of the Surasenas and Palibothra is Patna, the city of Chandragupta, Asoka and Sophagansenus, with whom the Baktrian kings had held friendly relations. Another passage, referring to the Greeks in India, is taken from Patanjali's commentary on Pániui by Dr.

¹ Wilson Hind. Theatre, I., 347.

² As. Res., XV., 109.

³ Weber,

p. 321.

⁴ *Ibid.*, 251, and Kern's translation of the *Brihat-Sanhita* in J. K.

A. S., IV., V.

⁵ Num Chron., X., 224.

⁶ J A S, Ben., 1886, page

516; Rhys David's Buddhism, p. 96; Hardy's Manual of Buddhism, p. 523, and ed.

⁷ Cann. Anc. Geogh., p. 180.

⁸ l'. 360.

Goldstücker,¹ where he says :—"The Yavana besieged Ayodhya ; the Yavana besieged the Mádhyamikas." Here Ayodhya is the sacred Ajudhiya in Oudh and the Mádhyamikas are the people of the middle-country (Madhyadesa) including the Gangetic districts south of Panchála and north of the delta. Patanjali gives the word 'besieged' in the imperfect tense as an illustration of the rule that this tense should be used "when the fact related is out of sight, notorious, but could be seen by the person who uses the verb ;" so that, as observed by Dr. Goldstücker, it may be considered Patanjali was contemporary with the event. Now Patanjali lived towards the middle of the second century before Christ, a date which will correspond very well with that to be assigned to Menander on other grounds. In the lists of the kings of Magadha we have the name Pushpamitra, who lived between B. C. 178 and 142. In the *Málarikágnimitra*² of Bhavabhúti, Pushpamitra, prince of Vidisa, a kingdom lying north of the Vindhya (Bhilsa), before performing the great Asvamedha rite, is said to have let loose a horse that it might wander free over the earth for twelve months. The horse was attended by a guard under the command of his grandson Vasumitra and the party was attacked by some Yavana horsemen on the south side of the Sindhu river, which is identified by General Cunningham with the Sindhu river in Narwar. Túránáth, the Tibetan Buddhist historian, also states that the first invasion of India by foreigners took place during the reign of Pushpamitra and five years before his death, so that the great expedition of Menander in which he overran Oudh and the Gangetic valley as far as Patna cannot have been earlier than B.C. 147. From all these indications we cannot assign to the Yavanas any direct connection with the Kumaun Himálaya, notwithstanding the statements of respectable authorities to the contrary.

We have now to return once more to Bactria and to the

Bactria in the classical accounts that have survived of the tribes inhabiting the countries in its neighbourhood.

¹ Páñinī, p. 230. ² Wilson's Works. ³ See further Dr Rajendralala Mitra's essay. 'On the supposed identity of the Greeks with the Yavanas of the Sanskrit writers' in J. A. S. Ben., XLIII., 1., 245, in which he considers the term 'Yavana' was the name of a country and of its people to the west of Kandahár which may have been Arabia, Persia, Media or Assyria, probably the last: subsequently it became the name of all those places and again of all trans-Indus castless races, including the Baktrian Greeks of Kábul, but at no time referred exclusively to the Greeks of Ionia; and with it read Weber's article in Ind. Ant., IV., 344.

Enthydemus in his negotiations with the Syrian king Antiochus III. (B. C. 208) urged¹ amongst other matters that "those wandering tribes who were spread in great numbers along the borders of the province were alike dangerous to them both, and that if ever they should gain admittance into it, the whole country must inevitably fall into barbarism." Sixty years previously the Parthians had won their independence and were steadily preparing for the encroachments which Mithridates afterwards made on the southern provinces of Baktria, though they too had to contend with barbarous foes from the east. We fortunately have several allusions to the inroads of the Skythians in the classical authors. Pliny² writes:—

"Beyond this river (the Oxus) are the peoples of Scythia. The Persians have called them by the general name of Saccæ, which properly belongs to only the nearest nation of them. The more ancient writers give them the name of Aramii. * * The multitude of these Scythian nations is quite innumerable: in their life and habits they much resemble the people of Parthia. The tribes amongst them that are better known are the Saccæ, the Massagetæ, Dahæ, &c. (19 names). Indeed upon no subject that I know of are there greater discrepancies among writers from the circumstances, I suppose, of these nations being so extremely numerous and of such migratory habits."

In the epitome³ of Trogus Pompeius it is stated that the Saranœ and the Asiani, Skythian tribes, took possession of Sogdiana and Baktria, and as this statement comes immediately before the allusion to the Indian exploits of Apollodotus and Menander, we may consider it as occurring immediately before their time. He further informs us that the Tochari received their kings from the Asiani, so that the two names must refer to one tribe. Curtius⁴ states that the Skythians and Dahæ were the first to invade India. Strabo⁵ writes that:—

"The Macedonians gave the name of Caucasus to all the mountains which follow after Ariana, but among the barbarians, the heights and the northern parts of the Paropamisus were called Emoda and mount Imaus: and other names of this kind were assigned to each portion of this range. On the left hand opposite to these parts are situate the Skythian and nomadic nations occupying the whole of the northern side. Most of the Skythians, beginning from the Caspian Sea, are called Dahæ Skythæ, and those situated more to the east Massagetæ and Sakæ: the rest have the common appellation Skythians, but each separate tribe has its peculiar name. All or the greatest part of them are nomads. The best known tribes are those who deprived the Greeks of Baktriana, the Asii, Pacheli (Asiani?), Tochari and Sakamuli, who came from the country on the

¹ Num. Chron., IX., 134; Rawlinson's Herodotus, IV., 308.

² Book VI., Ch. 19.

³ Num. Chron., X., 79.

⁴ VII., 14. Vita Alexandri.

⁵ Book XI., Ch. 2.

other side of the Jaxartes opposite the Sakæ and Sogdiani, and which country was also occupied by Sakæ: some tribes of the Dahæ are surnamed Aparni,² some Xanthii, others Pissuri."

Arrian³ identifies the Skythians to the north of the Jaxartes with the Sakas. Amongst these names we may refer the Asii and Pasiani to the same tribe as the Asiani of Trogus, and as this tribe belonged to the Tochari, there remains only the Sarancæ of Trogus, Sagaraukæ of Ptolemy, and Sakarauli of Strabo—all synonymous with the Sakas or Sús. The Chinese annals clearly show that the Yueh-ti or Tochari and the Sús were the only two barbarian tribes in this neighbourhood at this time.

During the reigns of Mithridates I. of Parthia and Demetrius of Baktria, the Skythians were continually making incursions from the east and were with difficulty repelled. Phrahates, the successor of Mithridates, called in their aid against the Syrians, but the Skythians arrived too late to take part in the war and the Parthian king refused to pay them or lead them against some other foe. They accordingly commenced to ravage Parthia itself and Phrahates fell in battle against them (in B. C. 126), in which his Greek mercenaries joined the enemy.⁴ These Skythians can be none other than the Sakarauli branch of the Sús and the last of them to leave Ta-hia for the south, for we find that Artabanus II., uncle and successor of Phrahates, died a few years afterwards in a fight⁵ with the Tochari, who must have been a branch of the Yueh-ti, the successors of the Sús in Baktria. The Sakas are further mentioned as giving the name Sakastone to the Paraitakene district in Drangia (or the valley of the Helmand), and their capital city was Sigal, now identified with Sekuha, one of the principal towns of Seistán.⁶ From the above we learn that the Sakas were the principal tribe in the earlier immigrations of the Skythians and that to many Skuthæ and Sakæ were synonymous terms; at the same time they were divided into a number of clans, each having its own name, sometimes allied and sometimes at war with each

² See Cunningham, Arch. Rep., II., 47, for his speculation as to the modern representatives of these tribes. He connects the Aparni with the Abars (p. 29-49); the Xanthii with the Játs (p. 54), and the Pissuri with the Paraitakæ (p. 50).

³ B. k. IV., 1, 4.

⁴ Lindsay's Parthia, p. 13; Rawlinson's Sixth Monarchy, p. 109.

⁵ 'Skythiæ' depopulata Parthia, in patriam revertuntur. Sed Artabanus bello Thogariis illato, &c.' Here the Skythians are distinguished from the Tochari, who are the Tusháras or Tukhásas of the Paránsas.

⁶ J. R. A. S., IX., 19.

other, and that wave after wave of these clans poured across the Altái, pushing forward those that had preceded them. Our further illustrations are from Chinese sources.

In the Chinese works *T'sien Han-shu*, and *S'hi-ki* or 'Historical record,' we possess most valuable information on the state of the countries adjoining Bactria from the third century before Christ.¹ Mr. Kingsmill informs us that according to the unanimous tradition of the Chinese, the tribes of the founders of the Chinese power under the name Chows were driven from their original seats in the land of Ban by barbarous tribes known as Diks, later on called Hínyuk or Hündjuk. Allied with these were the Hímwans, the Hien-yun of modern Chinese. Both of these tribes are by the earlier writers of the Han dynasty connected with the Jung of the Chow authors, a name which by the time of the Hans² had become changed to Nú in the title of the Hiung-nú. From other sources we learn that a race called Yueh-ti occupied the provinces of Kansuh and the Tangut country to the east of the desert of Gobi in the third century before Christ, and that they were harassed by the Hiung-nú and fled before them westwards. The *T'sien Han-shu* records that in B. C. 221, 'the Tung-hú had become a formidable power and the Yueh-ti were in a flourishing condition. The Shen-yu of the Hiung-nú was named Tow-man. The latter meeting with a reverse in his contest with T'sin moved northward.' Here mention is made of only three nations the Tung-hu, Hiung-nú and Yueh-ti. In B. C. 206, Maoudun,³ the Shen-yu of the Hiung-nú, engaged in hostilities with the Yueh-ti, whom he defeated. In B. C. 176, in consequence of reprisals on the part of the Chinese, the Hiung-nú invaded and occupied the country of the Yueh-ti, while Laulan,⁴ Wásun, Háki and twenty-six neighbouring states submitted to them. The king of the Yueh-ti was taken prisoner and his barbarous conquerors made a drinking-cup from his skull.

From the *Shi-ki* of Szema Tsien⁵ we learn that in B. C. 138 Djang-kien, Marquis of Po-wang, was sent as an envoy from China

¹ Wylie, *J. Anth. Inst.*, Vols. 2, 3, 5, 9.

² Me-te of deGuignes.

³ The founders of the modern empire of China.

⁴ Elsewhere it is said that

Lu-lan and Gu-ze have walled cities adjacent to the great salt marsh which lay to the east of Khotan and west of Kansuh.

⁵ *J. R. A. S.*, X. (N. S.), 294, by Kingsmill, whose translation differs in some essential respects from that given by M. de Guignes in 'Histoire de l'Académie Royale des Inscriptions et Belles Lettres,' XV., II., 17, 1789.

to the Yueh-ti, to induce them to make cause against the common enemy, the Hiung-nú. Being compelled to pass through the Hiung-nú settlements along the northern face of the Kuen-lun, Kien was recognized and taken prisoner and detained there for ten years. When he succeeded in making his escape he travelled westwards for ten days and arrived at Da-wan, then occupied by the Yueh-ti, but not progressing in his negotiations, was sent on by the high road to Gang-gu. This latter country adjoined the territory occupied by the greater Yueh-ti, whose king Sze had been killed by the Hiung-nú and they had set up his heirs in his stead. The Yueh-ti had overcome Ta-hia and taken up their residence in that country, which was rich and fertile, and it is recorded that "they would rather be exterminated than submit to the Hiung-nú." From the Yueh-ti, Kien went on to Ta-hia and remained a year at Bingnan-shan. He was desirous of returning by Tibet, but was again captured by the Hiung-nú and detained until the death of their Shen-yu in B. C. 126, when he escaped to China and in B. C. 122 gave this interesting account of his travels.¹ From this record we know that in B. C. 128 the greater Yueh-ti had already occupied Ta-hia or Bactria. From other sources we learn that the Yueh-ti had found another named tribe named Su already settled in those countries and drove them to occupy the country to the north-east of Ferghana and the Jaxartes.

In these Sús we recognise the Sahas of the Puránas and the Sakarauli, Sagaraukæ,² Saruncæ and Sacæ of classical authors. From the Marquis Po-wang we learn that they had been driven out of Kashgár as early as B. C. 138 and out of Takhia before B. C. 128. The Sus pushed onwards and occupied Kipin, a country which is often named in the Chinese annals and is also incidentally noticed by the traveller Fah-Hian. From a comparison of all the accounts, Kipin lay along the upper part of the sources of the

¹ Wylie, J. Anth. Inst., IX., 59.

² Cunningham derives this name from the *Sagar*, or iron-headed mace, which was their national weapon. Arch. Rep., II., 33, 43. We read that Demetrius, son of Euthydemus, who certainly lived in the first half of the second century before Christ, carried his arms into the country of the Nuras (Seres) and Phruri (Phauni, Phrumi). Some refer the Phrumi to the Grinæi Skythians of Ptolemy, who held Yarkand, and identify the Nuras with the people of Su-le, an old name of Kashgár. According to Ptolemy the Sacæ lived to the south of the Grinæi Skythians, and this allocation of the tribes agrees well with the Chinese accounts. These Seres and Phruri are mentioned elsewhere with the Tochari and V. de St. Martin connects the Phruri with the Phaunas of the Indian records: see NUM. Chron., I., 148.

Kábul river and is the Hu-phi-na of Hwen Tshang (Yuen-chwang). It appears to have varied so much in its extent as to represent an ethnographical rather than a geographical term. The Yueh-ti were in turn pressed by the Ausuns or Ousuns, probably the people of Wu-sun¹ to the north-east of Da-wan described hereafter, and who following in the wake of Sús, occupied Tahia.

That the Yueh-ti were of the same race (not the same tribe) as the Sús may be considered probable from the fact that we have no record of there being other than three well-known nations of Skythians in this neighbourhood at this time: that the Yueh-ti tribes occur with the Sakarauli, a presumably distinct Saka name in the enumeration of Strabo, and that they are included with the Sús under the name Sacæ by most classical authors. Tahia, on its conquest by the Yueh-ti, was distributed into five governments or provinces, *viz.*, Hieou-mi, Chouang-mo, Kouei-chouang, Hy-tun and Ton-mi. So soon as the Yueh-ti had settled down in Baktria, one branch crossed into Kipin or Ariana and drove the Sús from the Kábul valley into the valley of the Helmand. The portion of Kipin annexed by the Yueh-ti was called Kao-fu² (Kábul) and its people are described as like the Indians in their habits and character. They were more merchants than soldiers, and before the conquest of the Yueh-ti, one part belonged to Parthia, one to the kings of India and one to the kings of Kipin. The conquest of Kipin was effected by Khiu-tsi-li, the chief of the Kouei-chouang or Gu-shan tribe, a name of which we have traces in the city of Gu-sze near the great salt marsh to the west of Tangut. Khiu-tsi-li reduced the leaders of the other four tribes³ to submission, declared himself king and imposed the name of his own tribe on the entire nation.⁴ The conquest of Kipin took place about B. C. 38, for we

¹ Kang-ku was the Chinese name for Shighnán or Sogdiana, which appears to have been by Sakas (here Yueh-ti) as late as B. C. 40, and who were then at feud with the Wu-sun: Jour. Anth. Inst., V., 48.

² Ma-twan-lin notes:—"The kingdom of Kao fu was known in the time of the Hans. It is situated to the south east of the great Yue-che. It is likewise a considerable state. Their manners resemble those of the inhabitants of India and they are gentle and humane. They carry on much commerce with India. India, Kophene (Kábul) and the country of the Ars are three kingdoms which are conquered by force and lost by weakness." Ind Ant., IX., 15.

³ DeGuignes has the names Hieou-mi, Choam-mi, Kuei-choam, Hie-tun and Kao-fu, which last was established on the conquest of Kipin. Klaproth gives the names in the text.

⁴ Klaproth's *Tableaux historiques de l'Asie*, p. 133: Paris, 1826; Lassen's *Baktrian Coins*, p. 168. Other names for the Gu-shan tribe are Kuei-choam Kwái-chang Gau-chang. The earlier coins of Koron's-Kadphises bear the name of the Greek king Hermaus on the obverse which would lead us to suppose that he supplanted a Greek ruler in Kábul at least.

read that it occurred a century after the deputation of Djang-kien to the Yueh-ti, who were then in Kashgár. Khiu-tsi-hi died at the age of eighty and was succeeded by his son Yen-kao-chang, who may be identified with the Hima-kadphises of the coins. Before examining these coins we shall give the geographical notices of the Chinese annals, which in every respect confirm the results arrived at independently from our examination of western records.

Szema Tsien, the Chinese author to whom we are indebted for Geography according to the Chinese records. the account of the embassy of Kien, furnishes us in his *Shi-ki* with further geographical indications which shed much light on the political relations of this period. According to him Da-wan¹ lay to the south-west of the Hiung-nú territory and due west from China some 10,000 li. It had seventy subordinate towns and a population of about 100,000. "The soldiers use the bow and spear and shoot from horse-back. To the north lies Gang-gu; west, the country of the Yueh-ti; south-west, that of the Tochari²; north-east, Wú-sun; east, Han-mow and Yu-tien.³ Wú-sun lies north-east of Da-wan about 2,000 li. Its people are herdsmen and of similar manners to the Hiung-nú. Its bowmen are 10,000 in number and they are daring and quarrelsome. Formerly they were subject to the Hiung-nú, but now they are in a prosperous condition. They marry their near relations and refuse to pay homage at court. Gang-gu⁴ lies to the north-west of Da-wan. It is not so large as Da-wan, but is as large as the country of the Yueh-ti and the manners and customs of the people are similar. It can muster 80,000 to 90,000 bowmen. On the south it has relations with the Yueh-ti and on the east with the Hiung-nú. Im-tsai⁵ (or Im-tsai ar-gan) lies to the north-west of Gang-gu some 2,000 li; it is as large and its customs are alike. It can muster 100,000 bowmen; it overlooks the great shoreless marsh reaching to the northern sea. Da-yue-ti⁶ (or the country of the great Yueh-ti) lies west of Da-wan 2,000 or 3,000 li. The Yueh-ti dwell north of the Gwai-shui.⁷ To their south is Dabia⁸; west, An-sih; north, Gang-gu. They are herdsmen and nomads with customs similar to those of the Hiung-nú. They can muster 100,000 to 200,000 bowmen. In former times

¹ Yárkand² On the upper affluents of the Oxus.³ Khoten.⁴ Part of Ferghana Oxus?⁵ On the Syr-darya.⁶ The Máha north of the⁷ Oxus.⁸ Balkh.

they were rash and under-rated the power of the Hiung-nú and rejected all accommodation. The Hiung-nú attacked and routed them; Shen-yu the Lao-shang killed their king and made a drinking cup out of his skull. Formerly the Yueh-ti dwelt between Dun-hwang¹ and Ki-lin, when they were invaded by the Hiung-nú, they were compelled to emigrate to a distance. They passed Da-wan, invaded Da-hia on the west and overcame it. Following the course of the Dú-gwai-shui they fixed their royal residence on its north bank. A smaller portion of the tribe which was unable to accompany them sought the protection of the Giang² of Nan-shan: this branch is known as the smaller Yueh-ti.”

“An-sik³ lies west of the Yueh-ti about 1,000 *li*. The country is open, the land tilled. It produces both rice and wheat. Distilled liquors are used. Its cities are like those of Da-wan; those dependent on it, large and small, are about one hundred in number. The extent of the country is about 1,000 *li* square. It is a very powerful state. It overlooks the Gwai. There are marts where the people and merchants meet to buy and sell. Carriages and ships are used for the transport of merchandise to neighbouring countries perhaps 1,000 *li* off. Silver is used in coins and the coins bear the likeness of their kings. When the king dies, the image is immediately changed for that of the new ruler. They write on skins of parchment and make books of it. To the west of An-sik is Tiaou-chi⁴: north, In-tsai-ar-gan. Tiaou-chi lies about 1,000 *li* to the west of An-sik. It overlooks the western sea and is an agricultural country producing rice. There are great birds there producing eggs like water-jars.⁵ The inhabitants are very numerous. They are continually electing petty sovereigns. In consequence An-sik has taken it under its protection, but treats it as a foreign country. The country is good but disorderly * * * Da-hia lies upwards of 2,000 *li* south-west of Da-wan, to the south of the Gwai-shu.⁶ Generally speaking the country is open. It has cities and dwellings similar to Da-wan. It has no supreme sovereign; each city and town elects its own petty ruler. Its soldiers are weak and cowards in fight. The people are good as merchants. The Yueh-ti attacked it from the west and completely

¹ Now Sha chan in Kansuh.
rangia.

² Tibetans.

³ Fartala.

⁴ Sa-

⁵ The i. no's egg. Yule's Marco Polo., II., 248.

⁶ Ozaa.

subdued it. The population is numerous, probably over a million. Its capital is called Lam-shi-ching.¹ There are marts for the purchase and sale of merchandise. To its east lies Shin-duh.² Djang-kien³ said that when he was in Da-hia he saw *keang*⁴ bamboo staves and *shuh* (Sze-chuen) clothes. He asked whence they were obtained. The people of Da-hia said their traders went to the Indian markets. India is distant from Da-hia to the south-east about (several) 1,000 li. Generally speaking the country is settled and resembles Da-hia. Its climate is damp and hot. Its people use elephants in war." Thus ends this valuable succinct record.

Returning to the coins we find amongst those imitating apparently Arsacidan models an unique one⁵ bearing on the reverse the legend—*ῥεγαυοῦντος Ἡγαου Σακα κορρανου*—‘of the Saka king Heraus.’ The last word ‘*κορρανου*’ is by some translated ‘ruler’ and is connected by them with the Homeric Greek *κοίρανος*, but besides the great improbability of a Homeric title being revived for the first time by a barbarian king, we have evidence to show that the word is to be connected with the tribal name of the king.⁶ On the coins of Kadaphes and Kadphises,⁷ we have the forms ‘*choransu*,’ ‘*korsu*,’ and ‘*korsea*’ in Greek, instead of ‘*korranou*’ and ‘*kushan*,’ ‘*khushan*’ and ‘*gushan*’ in Arian; and on those of Kanerki, Ooerki and Basdeo it occurs as ‘*korano*’ on coins and as ‘*gushan*’ in inscriptions. In the Mánikyála inscription⁸ of Kanishka so often quoted in these discussions, Kanishka or Kanerki is styled “The increaser of the dominion of the Gushans” (*Mahārāju Kaneshka Gushanavasa samvardhaka*), and in the Panjar inscription⁹ we have a second reference to a Gushan prince (*Maharayasa Gushanasa*). It is also worthy of remark that the word ‘*korano*’ occurs only¹⁰ on those coins where the Greek ‘*basileus basileor*’ or ‘king of kings’ of the

¹ 𑀅𑀲𑀓𑀢𑀺, Zariaspa.

² Sbin-tuh in the Han annals: T’ien-chih.

in Ma Tuan-lin. ³ Also called Chan: K’ien, the Tchong king of de Guignes.

⁴ The name of a hill in Sze-chuen producing bamboo with long joints and solid hearts known as male bamboo in India.

⁵ Thomas in J. N. A. S., IX., 20.

⁶ Some connect the ‘Su’ in ‘Su-Hermans’ and in ‘Chorasu’ with the Saka or Sakas and the name Hermans with Heraus.

⁷ Thomas’ P. Inscr., I., 146.

⁸ J. N. A. S., XX., 223.

⁹ Arch., Hep., V., 61.

¹⁰ The legend on the coin of Heraus may appear to be an exception, but his coin does not bear a title equivalent to ‘king of kings,’ but merely that of satrap or *stratou*.

Greek legends is rendered by the Skythic equivalent '*rao nano rao*.' We have traces of the latter still in the old Indo-Skythic province of Gujr t' in the title 'Ra of Junagarh'; in Gilgit, where the old rulers had the title 'Ra' and the old name of which is 'Sargin'; throughout Rajputána and the Dakhin in the title 'Rao'; in most Rájput clans in the titles 'Rao' and 'Ráwat,' whilst the head man of Spiti is still called 'Nono,' and the honorific title 'Nana' is common amongst the Maráthas. It is not clear whether we are to regard the word '*korano*' as purely the name of a tribe or a ruling family and the equivalent of '*Gushan*' in the inscriptions or the name current in the tribe for a king or ruler and added on in the same way as '*Soter*,' '*Dikaios*,' '*Theos*' and the like. In any case it was a title characteristic of the Yueh-ti tribe and may possibly be still found in the name '*Reno*' applied to the most honoured clan in the Hindu-kush.³ If the conjecture that Hima (Ooemo) Kadphises is one with Yen-kiao-chang be accepted we may assign to his father and the founder of the dynasty, Khiu-tsi-bi, the coins bearing⁴ the legend *kozola-kadaphes choransu zathou*, and on the reverse the legend—'*kushanga yathaasa kujula-kaphsa sachcha dharmapida*,' 'the coin of the Kushang king Kujula-kaphsa, the crown of the true dharma.' Have we here⁵ the Kushang clan of the Yatha or Ye-tha, a name by which the Yueh-ti were known later on? On a coin of Ooemo Kadphises we have the Baktro-Páli legend—*Maharajasa Rajadhirajasa sarva-logu-iswa,asa Muhiswarasa Kothpisa*—'Of the Mahárúja, supreme king, lord over all people, the great lord, Kathpisa.' In Kujula-kaphsa or Kozola-kadaphes⁶ we have the representative of the Kushang tribe; and if '*korano*' be taken to have the same meaning as '*kushang*' we have further members of the same family in the Turushikas of Kashmir—'*Rao nano rao Kanerki korano*,' '*Rao nano rao Ooerki korano*,' and '*Rao nano rao Bazodeo korano*.' Heraus the Saka also bears the title '*korano*' and he was certainly not of the Gushan clan of the

³ Ind. Ant., III, 193.

⁴ Jessalmer, Bundi, Kachh, &c.

⁵ Bid-

dulph's 'Tribe of the Hindoo-kooch,' p. 24.

⁶ Thomas Prinsep, II.,

208 and J. A. S. Ben.

⁷ M. Klaproth in his 'Tableaux historiques' writes (p. 136)—'Un auteur Chinois nous apprend que Ye-ta était originairement le nom de la famille de leurs rois et qu'il est devenu plus tard celui de toute la nation; on le prononce aussi Y-ta. Leur empire s'éleva dans le septième siècle et les Ye-ta devinrent tributaires des Tucs.'

⁸ We have also a *Kozola-kadaphes* who may be identified with this *Kozola-kadaphes*, but both names are read distinctly.

Yueh-ti. We may therefore suggest that the tribal name gradually became the title of the ruler, whether the family belonged to the Gushan clan of the Tochari or not, and that it was conferred on the governors of provinces and on such of the conquered race as had submitted, but were allowed to retain their possessions.

Hima Kadphises or Yen-kiao-chang enlarged and consolidated the conquests of his father and extended his influence as far as the valley of the Ganges to a distance of 3,000 li from the Indus and there reduced the country of Tim-li and its capital Chao-ki-tching, neither of which has as yet been identified. The coins which according to numismatic evidence follow those of Kadphises and which are known as the Kanerki-group¹ bring us to a series of kings who are known to us by their coins and inscriptions and are also mentioned in contemporary records. Their names occur in a number of inscriptions in the Indian-Pali alphabet and dated in an unknown era which were discovered at Mathura (Muthra):—

Kanishka—*Mahārāja Kanishka*, S. 9, 28.

Huvishka—*Muhārāja Rājatirāja devaputra Huvishka*, S. 33, 39, 47, 48.

Vāsudeva—*Mahārāja Rājatirāja devaputra Vāsu*, S. 44; and *Mahārāja Rājatirāja Shūhi Vāsudeva*, S. 87, also with dates 44 and 98.

Many others with varying dates, but without mentioning the name of any king, were found in the same locality. We have named inscriptions in the Baktrian-Pali character of Kanishka (Bahawalpur) dated in San. 11, and again as '*Muhārāja Kanishka Gushanavasa samvardhaka*,' dated in San. 18, at Mānikyāla, and one of Huvishka as '*Mahārāja Rājatirāja Huvishka*,' dated in San. 51, on the Wardak vase: in the first and third the Greek names of the months are used. Besides these we have the inscriptions² found by Mr. Löwenthal at Zeda in the Yusufzai district in which occurs the words '*Kanishkasa Rāja tsandharya*' of Kanishka Rāja of Gandhāra. There is also a Taxila record³ in

¹ Thomas' Prinsep, I., 39, 126, 134; J. R. A. S., IX., 1, 165. Cunningham Arch. Rep. III, 38; V., 5; Auc. Geogr. p. 99. Thomas' Gupta Dynasty, p. 16; Arch. Bar. West. India, 11., 51. J. A. S. Ben., XXXII., 140. ² Arch. Rep. V, 57; J. A. S., Ben., 1863, 6. ³ J. R. A. S., XX., 237; J. A. S., Ben., 1863, 48.

which the Satrap Liako-Kusuluko speaks of the "78th year of the great king, the great Moga, on the fifth day of the month Panæmus." The Takht-i-Bali inscription of the Parthian king Gondophares is translated¹ by General Cunningham:—"In the 26th year of the great king Guduphara in the samvat year three and one hundred (100 + 3), in the month Vaisakh, on the 4th day." Mr. Thomas would apply the Seleukidæan era to the dates given in the Mathura inscriptions of Kanishka and Huvishka.² This era commenced in the year B. C. 312, and the difference is provided for by assuming the use of a cycle of 100 years, or as appears to be the custom in the north-west Himâlaya, the suppression of hundreds in the dates in common use. Thus in Kashmîr,³ the year 24 is given as the date of the composition of the *Râja Tarangini* by Kalhana, but this really stands for 4,224 of the Kashmîr era which began in B.C. 3,076. According to this scheme San. 9 of Kanishka's Mathura inscription represents B.C. 2-3. General Cunningham⁴ and Professor Dowson⁵ apply the Vikramâditya era to these dates, which brings out B. C. 48 for the same date, and Mr. Ferguson⁶ assigns these dates to the Saka era, which would give us 87 A. D., and for reasons given hereafter we accept this as most in accordance with facts. The Huvishka of the inscriptions has been identified with the Oerki of coins and the Kanishka of the inscriptions with the Kanerki of the coins; and in place of the Gushka or Jushka of the Kashmîr chronicles we have Bazodeo or Devaputra Vâsudeva, the Shâhi Vâsudeva, a title reproduced in the *Sahânu-Sâhi* of the Kâlaka legend noticed hereafter and in the *Sabânu-Sâhi* of the Gupta inscription on the Allahabad pillar. The legend on the obverse of the coins of these Turnshkas is the same throughout, '*Rao nano rao — korano*,' merely differing in the name and the legend on the reverse. The indications derived from a study of the coins further show us that Buddhism was the favoured religion under Kanishka. The coins of Huvishka exhibit traces of the popularity of the Saiva forms, the worship of the sun-god and Iranian beliefs; but Basdeo's coins are almost

¹ Arch. Rep. II, 59; V, 59; Ind. Ant. IX, 256. ² Baktrian coins and Indian dates, J. N. A. S. IX, 1. ³ Dr. Bühler on Kashmîr era, J. N. A. S. XII, (1877). ⁴ Arch. Rep. III, 29; V, 60. ⁵ J. N. A. S. V. ⁶ J. N. A. S. IV, 81; XII, 252, which contains a valuable summary of the facts regarding the Saka and Vikrama eras: see also his Hist. Ind. Architecture, App. A.

entirely confined to the Okro (*ugra*) or terrible form of Siva clothed in Indian fashion with trident and noose (*pasu*) and attended by the bull Nandi. As Pasupati, Siva is still supreme in the hills from Garhwál to Nepál. The general result shows that, contrary to tradition, these princes were not synchronous.¹ Huvishka's date overlaps the earliest date of Vásudeva by a few years, if the latter has been correctly read; but we cannot reconcile Kanishka's dates with those of Vásudeva if they were brothers and contemporaries. We may reasonably hold that all that this legend intends is that they all belonged to the same race or family.

The 'Chronicles of Kashmír' give us the names of Asoka, Jaloka and Damodara and, proceeds² with Notices of Kanishka. the narrative thus :—

" Ensuite régnèrent trois rois nommés Hushka, Jushka et Kanishka qui bâtitrent trois villes designées par le nom de chacun d'eux. Jushka, roi vertueux construisit un vihâra et les villes de Jushkapura et de Jyaawâmi. Ces rois issus de la race des Turushkas étaient cependant protecteurs de la vertu. Ils bâtirent dans Sushka kahetra et dans d'autres contrées, des collèges des temples de Buddha et d'autres edifices. Pendant le long règne de ces rois le pays de Kashmír fut, la plupart de temps, entre les mains des Bâuddhas dont la force s'accroit par la vie errante. Alo s cent cinquante ans s'étaient écoulés depuis l'émancipation du bienheureux Sâkyasinha dans le fond de ce monde périssable. Ensuite l'heureux Nâgârjuna fut souverain de ce pays "

And again³ in the time of Lalitâditya we read :—

" Pour montrer manifestement l'empreinte de leurs chaines, les Turushkas tiennent par ses ordres les bras en arrière et ont la moitié de leur tête rasée."

There is no doubt that the 'Chronicles' are in error in assigning only 150 years to the interval between the death of Buddha and the accession of the Turushka princes. Hwen Thsang makes the interval 400 years,⁴ but in this he commits the same mistake that he made in the case of Asoka, who is placed⁵ by him only 100 years after the death of Buddha. Though the initial point of Hwen Thsang's chronology is wrong as might be expected from the history⁶ of the early Buddhist church in China, his relative

¹ Mr. Rhys Davids (*Buddhism*, p 228) gives the order Huvishka, Hushka, Kanishka, but for this arrangement evidence is wanting.

² *Ibid.*, p. 149 : Lalitâditya reigned 695-722 A.D ; see *Ibid.*, I., 502.

sur les Cont. (oc. I., 42, 106-7.

³ *Ibid.*, I., 170.

⁴ *Troyer II.*, 19.

⁵ *Mém.*

chronology may be generally accepted and according to this Kanishka will have lived three hundred years after Asoka. Now we know that Asoka reigned¹ about B. C. 252-217, and therefore Kanishka may, according to Hwen 'Thsang, be placed about 53-89 A. D. If we refer Kanishka's dates to the Saka era his *svavat* 9 in the Mathura inscription will fall in 87 A. D. Both the Chinese and Tibetan annals contain a full account² of the great Buddhist council held by Kanishka under the presidency of Vasubandhu and at the instigation of the sage Párvika at which five hundred monks were present and certain commentaries were composed which are mentioned by both Fah Hian and Hwen 'Thsang. The latter furnishes³ us with still further indications of Kanishka's power in the following statement. When Kanishka ascended the throne :—

"Faisait sentir sa force redoutable aux royaumes voisins, et l'influence de ses lois se répandait dans les pays lointains. Il organisa son armée et étendit ses domaines jusqu'à l'est des monts Ts'ung-ling (near the Pámir plateau). Les princes dépendants qui habitaient à l'est du fleuve craignant la puissance de ses armes lui envoyaient des otages." At this time :—"Il ne croyait ni au châtiment du crime, ni à la rémunération de la vertu ; il méprisait et calomniait la loi du Buddha" Whilst hunting one day Kanishka heard of the prophecy of Sákya that a king by name Kanishka would arise and build a stupa over his relics : "so flatant d'être désigné par l'ancienne prédiction du grand saint, il ouvrit son cœur à la folie et montra un profond respect pour la loi de Buddha."

On the spot he erected a great stupa, and this can be no other than the great stupa or tope at M nikyála⁴ already referred to. The latest Roman coins found⁵ with those of Kanishka in this tope bear the date B. C., 43 and these were worn and old. In a second tope opened during the Afghán war near Jalálabad⁶ coins of Kadphises, Kanishka, Huvishka and the Empress Sabina, the wife of Hadrian, were found, and the last could not have been minted before⁷ 120 A. D. In many of the earlier Buddhist works Nágirjuna is made a contemporary of Kanishka though he was apparently

¹ This question is, however, by no means settled ; Kern makes Asoka to reign 270-234 B. C. Ind. Ant III. 79. The date of Buddha's Nirvana is also still unsettled ; the southern Buddhist place it in B. C. 543 ; the Chinese in B. C. 480 ; others in B. C. 408 ; and again others in B. C. 380. ² M. C. I. 178 (Chinese) ; M. C. I. II, As. Rec. XX., p. 41 (Tibetan) ; Schmidt, Gesch. der Ost. Mongolen, p. 315 (Mongolian) ; La Combe's Vasilief, p. 26, 47, who shows how Buddhism extended from Kashmir to the Káoul valley, Turkestan and Tibet. ³ M. C. I. 48, p. 107. ⁴ Antea, p. 408 and Thomas' Prinsep, ⁵ *ibid.*, p. 146. ⁶ *ibid.*, p. 266.

earlier, and it is said that it was through his labours that the Buddhist religion spread through Kashmír and thence throughout the Himálaya. He is the Nágasena of the Ceylonese books and it was with him that the Yona king Milinda held his celebrated disputation.¹ The *Dípavansa*,² written in the the fourth century, however, has the statement:—"The Thera who originated from the Kassapa tribe, Majjhima Durabhisára, Sahadeva, Múlakadeva, converted the multitude of Yakkhas (Yakshas, Khasas) in the Himavat and the Thera Mahárakkhita converted the Yavana region." It is probable, however, that by the last name Nágasena is intended as he was born of a Brahman family and received his initiation³ at the hands of the Buddhist fraternity of the rock Rakkhita and converted "Milinda king of Ságala, in the country called Yon." In the vernacular Tibetan⁴ Nágasena is called Lugrub and according to Westergaard's calculations lived in the first century A.D. He was the founder of the great Mádhyamika school of the *Maháyána* or 'Great-vehicle' which has exercised such influence in northern countries. In the *Chaturvinsati-prabandha* of Raja Sekhara,⁵ Nágárjuna is stated to have been a contemporary of Sávatáhana, a synonym for the founder of the Saka era. In Buddhist records the name of Kanishka is placed with that of Asoka as one of the great protectors of Buddhism, and on his death, or rather the fall of his dynasty, Brahmanising influences became supreme in Kashmír: so that when Hwen Thsang visited that country, he found there a king who was attached to Brahmanical views and who is identified by some with Pravarasena II. The summary⁶ of Ma-twanlin informs us that Shin-tu extended from the south west of the Yueh-ti and the kingdom of Kábul (Kaofu) to the western sea and on the east to Pan-khi, and that the Yueh-ti slew the kings of those kingdoms and filled their places with generals to whom they gave the governorship. Having become rich and powerful by these conquests, they remained in power till the time of the later Hans who began to reign 222 A.D. Above we have seen that about this time they were ousted from Kashmír by the Kritíyas and in the plains they were supplanted by the Guptas.

¹ *Asoca*, p. 324.

Manual of Buddhism, p. 534.

² J. B. B. R. A. S., No 21, p 223.³ Oldenberg's translation, p. 159.⁴ Schlegel's translation, Buddhism in Tibet, p. 80.⁵ *Mém. II.*, 197.

Connected closely with the debased form of the coins of **Basdeo** and his imitators come those of the **Kshatrapasa** or **satrap dynasty of Gujrat**, amongst whom **Satraps of Gujrat.** the name of **Raja Kshaharata Mahakshatrapa Nahapana** is the first. The **Nasik inscriptions**¹ show that his son-in-law **Ushavadata Dinikaputra** was a **Saka**, and the coins, whilst giving clear legends in the **Deva-nagari** alphabet, imitate in their devices the forms of the **Indo-Skythian** coins and also bear rude imitations of **Greek letters**. These letters appear to be an attempt to copy the corrupt form of the legend '*Rao nano rao*' as seen on the later **Turushka** coins. Following and closely imitating the better class of '**Sinha**' or so-called '**Sah**' coins come those of the **Guptas** and then those of the **Vallabhis**, each of which on numismatic evidence alone is shown to have followed the other, and all that we know from inscriptions confirms this fact. **Dr. Bhau Daji** would make this **Nahapana** a **Parthian** monarch and descendant of **Phraortes** and founder of the **Saka** era. But there is nothing to lead us to suppose that his influence was other than local, and the evidence inclines to show that he was not an ardent **Buddhist**. He was a **Saka** it may be presumed like his son-in-law and obeyed the same paramount authority that then held India, and that this was the **Turushka** ruler of **Kashmir** cannot be doubted.

We may therefore fairly conclude that the **Saka** era originated with **Kanishka** and that its initial date is **Vikrama and Saka eras.** to be referred to his consecration on the **4th March, 78 A. D.** We cannot, however, ignore the current traditions on the subject that it was dated from the destruction of the **Sakas** by **Salivahan**. The **Saka** era is, however, so closely connected with that known as the **Vikrama** era commencing with

¹ Ind. Ant., IX., 16.

² J. B. B. R. A. S., VIII., 238.

³ Ibid p.

239: the name **Sakusena** occurs in an inscription in the **Kanheri caves**: see also **Oldeberg Ind. Ant., X., 223**, for an interesting note on the **Ksh. traps** series of coins. There is evidence both from the coins and the inscriptions to show that **Nahapana** was the head of one line of **Kshatrapas** and **Chastana** was the head of another. As observed (**J. B. B. R. A. S., IX., 1; XIII., 351**) the coins of **Nahapana** are formed on an **Indo-Skythian** model showing the national weapons whilst the head has a **Greek** tinge: the coins of **Chastana** introduce the '**chaitya**' symbol instead like those of other **South-Indian** dynasties. On the connection between the **Sakas** and **Parthians**, see **Cunn Arch. Rep., II., 47**. A coin of **Zelonises** has the legend '**Manigilasa Chhatrapasa putrasu Chhatrapasa Jihonasa**' of **Jihonia** the satrap, son of the satrap **Manigilasa**, and **Cunningham** makes him an officer of **Kujula** king **Kadphises**. **Arch. Rep., II., 168**.

the new moon of March, B. C. 57, that the two must be considered together. We shall first take the local traditions. Both these eras are current in Kumaon ; the first occurs in the earlier historical documents and is used by the Khasiya population and the second appears in the later literary and religious compositions. According to the received Kumaon version of the Rájávali twenty-nine princes ruled in Indraprastha, beginning with Parikshit and ending with Lachhmi Chand. The last prince of this line was murdered by Mantri Mitrasena, who was succeeded by nine members of his family, ending with Muthimal Sena. He in turn was slain by his minister Bírbañu (or Dhírbañu), whose descendants ruled in Indraprastha for fifteen generations ending with Udai Sena. The names of the fourth dynasty are taken from my copy, Tod, Ward and Cunningham :—

My copy.	Reigned.	Ward 1, 24.	Tod I., 46.	Cunningham, J. A. S. B., VII., 24
	Y. m. d.			
Dhiradhara ...	42 7 24	Dhoorandhara.	Dhoodsena.	Yonadhara.
Saindhuna ...	35 10 12	Senodihata.	Sendhwaja.	Senadhwaia.
Saina ...	41 10 8	Manakataka.	Mahagnunga.	Mahiganga.
Mahájaya ...	30 4 1	Maha-yodha.	Nada.	Mahajodha.
Biranátha ...	28 5 28	Nat'ha.	Jewana.	Sarna.
Jivaráma ...	42 2 15	Jeevana-raja.	Oodya.	Jivan-airáj.
Udayasaina ...	35 7 22	(odaya sena.	Jehuis.	Umei-sen.
Dhípála ...	52 3 8	Vindhachala.	Ananda.	Anandajala.
Rákshapála ...	26 0 0	Raja-pala.	Rajpala.	Rajapála.

My copy of the Rájávali states that Rakshapála (Rájapála) was slain by Sakadatta, who after a reign of 95 years was expelled by Bír Vikramáditya, that the latter reigned for 93 years and was slain by his successor Samantapála. Ward¹ writes :—“ This last monarch (Rájapála) giving himself up to effeminate amusements, his country was invaded by Shakáditya, a king from the Kumaon mountains, who proved victorious and ascended the throne after Rájapála had reigned twenty-five years. The famous Vikramáditya in the fourteenth year of the reign of Shakáditya, pretending to espouse the cause of Rájapála, attacked and destroyed Shakáditya and ascended the throne of Delhi, but afterwards lost his life in a war with Sháliváhana, king of Pratisthana, a country to

¹ Ward's authority is a Brahman named Mrityunjaya, whose work was published in 1808 A. D. Could we have trusted these statements our work would have been much lightened, but in seeking for corroborative evidence, we have discovered their worthlessness and have by a series of negative conclusions arrived at some positive inductions as to the origin of the Khasas of Kumaon.

the south of the river Narmada. Vikramasena, the infant son of Vikramáditya, was raised to the throne, but was supplanted by Samudrapála, a yogi. Vikramáditya and his son reigned ninety-three years." Tod writes of Rájapála that "he carried his arms into Kumaon, but was killed by Sukwanti, the prince of that region under the Himálaya, who seized on Indraprastha or Dehli, whence he was expelled by Sakáditya or Vikramáditya." Tod again quotes from his authority : "Sukwanta, a prince from the northern mountains of Kumaon, ruled fourteen years, when he was slain by Vikramáditya, and from the Bharat to this period 2,915 years have elapsed." General Cunningham writes that Indraprastha was taken by Sakáditya or Sukwanti in B.C. 57, and was retaken by Vikramáditya Sakári. According to all modern tradition the author of the Vikrama era bears the title 'Sakári' from having destroyed the Sakas, whilst Sáliváhana, who established the Saka era 135 years later, is held to be one with a second Vikramáditya who also triumphed over the Sakas. Mrityunjaya makes Sáliváhan the conqueror of the Vikramáditya, who slew Sukwanta ; so that we are in this dilemma that some Hindu legends refer to only one defeat of the Sakas, whilst in others the two eras are explained as commemorating two defeats. For the numerous references to Vikramádityas in the later Indian records from the inscriptions of Chandragupta onwards we must refer the reader to Wilford's celebrated essay in which he identifies some nine Vikramas and almost as many Sáliváhanas and endeavours to educe order from chaos with the result that one feels more bewildered than enlightened at the end of the argument.

We shall now examine the evidence as to the age of Vikramáditya which may be reduced to three heads : (a) legends ; (b) express statements in authorities and (c) actual use in inscriptions. It would be unprofitable to state the legends at greater length than we have done, but one deserves some further notice as much conjecture has been built on it by many writers. It is found in the oft-quoted memorial verses containing the names of the nine gems of Vikramáditya's court. They appear to occur for the first time in a work called the

Legends.

Legend of the nine gems.

¹ Cunningham, Arch. Report, I., 139.

² As. Res., IX., 117.

Jyotirvidābhāraṇa, which Hall¹ believes to be not only pseudonymous, but also of recent composition. The passage runs:—“Now has this treatise been composed by me in the reign of the august Vikramārka, Lord of Málava and most eminent king of kings; in the assembly of which same king Vikrama are, as assessors, Sanku, the eloquent Vararuchi, Mani, Ansudatta, Jishnu, Trilochana, Hari, and Ghatakarpara, and also other literary men, amongst whom Amara Sinha is first and these also belong to King Vikramārka's court: Satya, Varáha-mihira, Sruta Sena, Bádaráyana, Manittha, Kumára Sinha, and other astronomers, such as myself. Dhanwantari, Kshapanaka, Amara Sinha, Sanku, Vetála Bhatta, Ghatakarpara, Kálidása, the celebrated Varáha Mihira and Vararuchi are the nine gems in the court of King Vikrama.” A description of the government is then given and the number of the soldiers of Vikrama, and that after destroying 555 millions of Sakas, he established the Saka era. Mention is next made of his conquest of “the Lord of the country of Rúm, the king of the Sakas,” whom he brought to Ujjayini to adorn his triumphal entry. The author dates his work in Káli-yuga 3068 or B.C. 33, but the style and language is comparatively modern, and though he calls himself Kálidása and one with the author of the Raghuvansa, there are reasons for doubting the statement and Weber places him as late as the sixteenth century.² No argument for or against the existence of the Vikramáditya can therefore be derived from the occurrence of this tradition beyond this, that the writers named are known not to be earlier than the sixth century, and therefore cannot be referred to the first century B. C.

We shall now quote the Musalmán writer³ Al Birúni, who is after all the principal authority on Indian eras. He wrote in the early part of the eleventh century and gathered his information at first hand in India, and is trustworthy, careful and accurate in his remarks. After describing the eras in use amongst the Indians Al Birúni tells us that they ordinarily employed the eras of Sri Harsha, Vikramáditya, Saka, Ballabha and Gupta. The

¹ Benares Magazine, VII., 275 (1852): see also Wilson, VI., viii., and Bhánu Dáji, J. B. B. A. S., 1862, 26. ² Hist. Ind. Lit., p. 201. ³ Fragments Arabes et Persanes inédits relatifs à l'Inde by M. Reinaud: Paris, 1845, and J. A. S. Paris, 4th Ser., IV., 280, Dawson & Elliot.

first was dated 400 years before that of Vikramāditya, but he adds :—

“J'ai vu dans l'almanach de Cachemire cette ère reculée après celle de Vikramāditya de 664 ans. Il m'est donc venu des doutes que j'n'ai pas trouvé moyen de résoudre.” This would give the year 607 A. D. for the initial year of the era of Sri Harsha. The era of Vikramāditya himself was calculated by taking 342, which was multiplied by 3 and made 1026, to which was added the years of the Jovian cycle of 60 years that had passed. This might lead us to suppose that the era was not known until after 1026 and indeed Reinaud in a note on this passage states that it commenced in 959 A. D., but we have an inscription of this century expressly dating from the Vikramāditya era. Al Birūni then proceeds to discuss the Śāka era :—“L'ère de Saca, nommée par les Indiens Sacakāla, est postérieure à celle de Vikramāditya de 135 ans. Saca est le nom d'un prince qui a régné sur les contrées situées entre l'Indus et la mer. Sa résidence était placée au centre de l'empire dans la contrée nommée Aryavartha. Les Indiens le font naître dans une classe autre que celle des Sakya : quelques uns prétendent qu'il était un Soudra et originaire de la ville de Mansoura. Il y en a même qui disent qu'il n'était pas de race indienne et qu'il tirait son origine des régions occidentales. Les peuples eurent beaucoup à souffrir de son despotisme, jusqu'à ce qu'il leur vint du secours de l'orient. Vikramāditya marcha contre lui, mit son armée en déroute et le tua sur le territoire de Korour, situé entre Moultan et le château de Louny. Cette époque devint célèbre, à cause de la joie que les peuples ressentant de la mort de Saca et on la choisit pour ère, principalement chez les astronomes.”

Here the Saka era is clearly assigned to the destruction of the Sakas by Vikramāditya. Al Birūni however adds :—

D'un autre côté, Vikramāditya reçut le titre de 'Sri' à cause de l'honneur qu'il s'était acquis. De reste l'intervalle qui s'est écoulé entre l'ère de Vikramāditya et la mort de Saca prouve que le vainqueur n'était pas le célèbre Vikramāditya mais un autre prince du même nom.” It is somewhat satisfactory to see that the difficulties regarding the assignment of this era are as old as the eleventh century.

Al Birūni then explains the Ballabha and Gupta eras :—

“Ballaba, qui a donné aussi son nom à un ère était prince de la ville de Ballabha, au midi de Anhalwara, à environ trente yojanas de distance. L'ère de Ballabha est postérieure à celle de Saca de 241 ans. Pour s'en servir, on pose l'ère de Saca et l'on en ôte à la fois le cube de 6 (216) et le carré de 5 (25). Ce qui reste est l'ère de Ballaba. Quant au Gupta Kāla (l'ère des Guptas) on entend par le mot *gupta* des gens qui, dit-on, étaient méchants et puissants et l'ère qui porte leur nom est l'époque de leur extermination. Apparemment, Ballaba suivit immédiatement les Guptas ; car l'ère des Guptas commence aussi l'an 242 de l'ère de Saca. L'ère des astronomes commence l'an 587 de l'ère de Saca. C'est à cette ère qu'ont été rapportées les tables Kanda Khātaka de Brahmagupta. D'après cela en s'en tenant à l'an 400 de l'ère de Yezderijod, on se trouve sous l'année 1408 de l'ère de Sri Harsha, l'an 1068 de l'ère de Vikramāditya, l'an

953 de l'ère de Saca, l'an 712 de l'ère de Ballaba et de celle des Guptas. D'un autre côté, les tables Kanda-Khâtaka comptent 366 ans, le Pancha Siddhantaka de Varâha Mihira 526 ans, la Karana Sâra 132 ans et la Karana Tilaka, 19 ans. Les années que j'assigne aux tables astronomiques sont les années adoptées par les indigènes eux-mêmes afin de donner plus d'exactitude à leurs calculs.

* * * Déjà je me suis excusé sur l'imperfection de ce qui est dit ici et j'ai averti que les résultats que je présente offraient quelque incertitude, vu les nombres qui excèdent celui de cent. Je ferai remarquer de plus que j'ai vu les Indiens, lorsqu'ils veulent marquer l'année de la prise de Somnath (par Mahmud) événement qui eut lieu l'an 416 de l'hégire et l'an 947 de l'ère de Saca je les ai vus écrire 242 puis au-dessous 606 puis encore au-dessous 99 enfin additionner le tout ensemble ; le qui donne l'ère de Saca. On peut induire de là que le nombre 242 indique les années qui précèdent l'époque où les Indiens commencèrent à se servir d'un cycle de cent et que cet usage commença avec l'ère des Guptas. D'après cela, le nombre 606 indiquerait les samvatsaras de cent complets, ce qui porterait chaque samvatsara à 101. Quant au nombre 99, ce seraient les années qui se sont écoulées du samvatsara non encore révolu, c'est ce qui est en effet : j'ai trouvé la confirmation et l'éclaircissement de cela dans les tables astronomiques de Durlab, le Moultanien : on y lit :— " cris 848 et ajoute le Loka-kâla, c'est-à-dire, le comput du vulgaire ; le produit marquera l'année de l'ère de Saca." En effet, si nous écrivons l'année de l'ère de Saca qui correspond à l'année actuelle et qui est l'année 953 et que nous retranchions de ce nombre la quantité 848 il restera 105 pour la Loka-kâla, et l'année de la ruine de Somnath tombera sur la nombre 98." This Loka kâla was in use in Kashmîr, but the cycle varied according to the place. " Les personnes qui se servent de l'ère de Saca et ce sont les astronomes, commencent l'année au mois de Chaitra.¹ On dit que les habitants de plusieurs des contrées qui sont voisines de Cachemire font commencer l'année au mois de Bhâdrapada² et qu'ils comptent en ce moment 84 ans. Ceux qui habitent entre (Baradari) * * et Mâri la font tous commencer au mois de Kârtika,⁴ et ils comptent maintenant 110 années. On prétend que les peuples du Cachemire se trouvent à présent dans la sixième année de leur cycle. Les inhabitants de Nairhar au delà de Mâri jusqu'aux limites de Tâkeshar et de Lohâor commencent tous leur années au mois de Mankher³ et sont maintenant arrivés à leur 188e année ; ils sont imités en cela par les habitants de Lanak, je veux dire Lamghan. J'ai entendu dire aux habitants du Multan que tel était aussi l'usage des habitants du Sind et de Kauauj et que dans ces pays, on avait coutume de commencer l'année à la conjonction du mois de Mankher ; pour les peuples de Multan, ils ont renoncé, il y a un petit nombre d'années à cet usage, et ils ont adopté la méthode suivie en Cachemire, c'est-à-dire qu'à l'exemple des Cachemiriens ils commencent l'année à la conjonction du mois de Chaitra."

This extract gives us the only notice from Arabian sources that

Observations on Al Birûni's account. can be relied upon regarding the chronology of the Hindus at this early period. There

¹ This shows that this chapter was written by Al Birûni in 1081 A.D.
² Chait, March-April. ³ Bhâdon, August-September. ⁴ Kârtik, October-November.
⁵ Mangair, November-December.

can be no doubt but that Al Birūni correctly represents the opinions current in his time, and he shows conclusively that even then contradictions were rife that could not be explained. His description of the mode in which he saw the people calculate the Saka era is interesting. The person using the era first put down the number 242 and then added to it the cycles of 101 years that had elapsed and then the number of years in the current cycle. Thus the year 947 Saka was obtained by putting together $242 + 606 + 99$; and Al Birūni gives as his opinion that 242 Saka was the year of that era in which it was introduced into use in the country in which he then was. This would give us 319-20 A. D., or the initial date of the local era adopted by the Brahmanising Vallabhis as distinguished from that of the foreign Indo-Skythian Buddhists. This date marks the decline of the Turushka dynasty in Kashmīr, and all indications lead us to suppose that early in the fourth century there was a great Indian revival in the countries to the south-east of the Indus. For some reason unknown to us the Arabian writer styles the Guptas 'a wicked and powerful race,' but this may simply mean that they were opposed to the people of the country in which Al Birūni was at the time and from whom he received his information and cannot be considered as an expression of critical opinion on his part regarding their conduct. There is no doubt that Al Birūni is wrong in assigning, in accordance with the popular tradition when he wrote, the initial date of the Saka era to the destruction of the Sakas, for as we have seen that race was a power in India long subsequent to the year 78 A. D. It is not our intention to discuss here the initial date of the Gupta era or to explain the second error of Al Birūni in assigning the initial date of the Gupta era to that of their extermination. The Vallabhi inscriptions are dated from 311 to 348 in an era beginning in 319 A.D., but it does not follow that the Gupta dates can be referred to the same initial date. Indeed General Cunningham gives good grounds for believing that the initial date of the Guptas is 167 A. D., and this we shall consider hereafter. However, Al Birūni's errors are clearly those of his informants, and had he stated anything else, we should

¹ On the Guptas, see Mr. Fergusson, *J. R. A. S.* IV., 81; XII., 359; Mr. Thomas' *Gupta Dynasty*, London, 1876; Dr. Oldenburg, *Ind. Ant.* X., 218; and General Cunningham, *Arch. Rep.*, IX., 16, and X., 112, where the subject is fully discussed in detail.

have good grounds for doubting his veracity, for as we have seen the popular legend regarding the origin of the Vikrama era was current in his time.

Before proceeding further we shall quote the passages in the 'Chronicles of Kashmir' bearing on the question of Vikrama and his date and for this purpose will quote from Troyer's translation¹ :—

" Dans le même temps (the death of Hiranya) l'heureux Vikramāditya appelé d'un autre nom Harsha, réunit comme empercur á Ujayini l'empire de l'Inde sous un seul paraol. La déesse Sri servit ce roi qui était comblé d'un bonheur merveilleux, en s'attachant á lui avec plaisir, ayant abandonnée pour lui les bras de Hari et les quatre océans. Employant la fortune comme moyen d'utilité, il fit fleurir des talents c'est ainsi qu'encore aujourd'hui les hommes des talents se trouvent la tête haute au milieu des riches. Ayant d'abord détruit les Sakas il rendit léger le fardeau de l'œuvre de Hari, qui doit descendre sur la terre pour exterminer les Mlechchhas."

Vikramāditya² placed the poet Matrigupta on the throne of Kashmir. In an earlier³ passage it is stated :—

" Ayant fait venir ensuite, d'un autre pays, Pratápálitya, parent du roi Vikramāditya, ils le sacrèrent souverain de l'empire. D'autres induits en erreur, ont écrit que ce Vikramāditya fut le même qui combattit les Sakas ; mais cette version est rejetée."

Here we have distinct mention of two Vikramādityas belonging to Kashmir, the earlier one at a distance of twenty-two reigns after the Turushkas and the later one after Toramána and Hiranya and clearly to be identified with the great Ohakravartti Raja Vikramāditya. Toramána and Hiranya were brothers and the name of the former is known to us from inscriptions and coins. The inscriptions occur at Erán and Gwalior and the Erán inscription appears to be connected with that of Budhagupta dated in 165 of the Gupta era.⁴ Mr. Thomas reads 180 on a coin of Toramána and Dr. Mitra read 180 plus some other figure on the Erán inscription.

We have evidence of the very early use of the Saka era not only in India but in other Buddhist countries. According to Alwis,⁵ "the era most familiar to the Ceylonese is the '*Saka Warasa*,' which is the year of some king of the continent of Asia whose name is Saka and who

¹ The authorities are Wilson's essay on the Hindu history of Kashmir in *As. Res.*, XV., 1. which is only an abstract translation, and Troyer's text and translation, Paris, 1840. ² Troyer, II., 75. ³ *Ibid.*, p. 43. ⁴ J. A. S. Ben., XXX., 277, Thomas' *Prinsep*, I. 240. On this Toramána question, see Cunningham, *Arch. Rep.*, III., 210. ⁵ J. B. B. R. A. S., 1866-67, p. 184.

was said to be the head of the royal house of Yavana." According to Sir S. Raffles,¹ the Javan era is called that of *Aji-Saka*, on whose arrival in Java it is supposed to have commenced; it begins in 75 A.D. In Bâli, the Saka era (*Saka Warsa Chandra*) is also in use and starts from 78 A.D., and the difference between the initial era in Java and Bâli is supposed to be due to the use of the lunar year by the Javans on their conversion to Islâm and of the solar year by the people of Bâli. One of the earliest Javan traditions makes Tri-tresta, the husband of Bramâni Kâli of Kâamboja, the first Indian immigrant in Java, and he was slain by another Indian adventurer, Watu Gûnung of Desa Sangala (Panjâb). In Siam,² the word for era is '*Sa-ka-rat*,' but there the sacred era commences with the Nirvâna of Buddha and the popular era with the introduction of Buddhism in 638 A.D. In both Tibet,³ China and Siam, the cycles of 60 years and of 12 years are also in use and, as we have seen, the cycle of 60 years was in common use in India at an early period.

In the Bâdâmi inscription⁴ of the Chalukya Mangalîswara occurs the following statement:—"Sri Mangalîswara who victorious in battle—in the twelfth year of his reign—five hundred years having elapsed since the coronation (or anointment, *abhisheka*) of the king of the Sakas." Here we have a very clear and distinct statement that, as might naturally be supposed, the era takes its name from its founder. The ordinary expression in the grants of the Chalukyas in recording a date is in the same terms as the preceding; thus in the Aihole grant,⁵ 'five hundred and six years of the Saka king having elapsed,' 'six hundred and sixteen years of the Saka⁶ king, having elapsed' and in an old Coorg document⁷ when the eight hundred and ninth year of the time past since the Saka king was current.⁸ None of these inscriptions give out an uncertain sound and in some hundreds of grants of the first eight centuries the Saka era is called the *Saka nriya kdla*, *Saka kala*, *Sakendra kdla*, *Saka bhûpa kdla*, and the like, without any allusion

¹ History of Java, II., 66; Crawford's Hist. Ind. Arch., I., 300. Buddhism appears to have been introduced into Ceylon in the third century before Christ; into Burma in the fifth century after Christ; into Siam in the seventh century, and into Java, Bâli and Sumatra in the sixth century.

² Crawford's Embassy to Siam, p. 390. ³ Schlegelweit, *Buddhism in Tibet*, p. 278.

⁴ Ind. Ant., III., 306; VI., 363; X., 57; Arch. Sur. West India, II., 237; III., 119.

⁵ Ind. Ant., V., 60; J. B. E. R. A. S., IX., 318. ⁶ Ind. Ant., VI., 91.

⁷ Ibid., p. 103.

to the destruction of the Sakas and clearly showing that the era was named from the accession of a Saka king. In a Jaina legend published¹ by the late Dr. Bhanu Dáji, a story is brought in to explain the origin of the Saka era which is in many ways very instructive for our purpose. Gardhabhilla, Rája of Ujain, is there said to have offended the sister of the sage Kálaka and paid no heed to the saint's remonstrances. Kálaka on this proceeded to the west bank of the Indus, where the kings were called Sáhí and the supreme king had the title Sáhánu-Sáhí. He induced a Sáhí and a number of nobles to return with him to Hindukadesa (India) and proceeding by Gujrát they reached Ujain and dethroned Gardhabhilla. The Sáhí became Rája of Ujain and the nobles who accompanied him became feudal chiefs. Because they came from Saka-kúla, they were called Sakas and thus originated the '*Saka vansa.*' Vikramáditya, son of Gardhabhilla, overthrew this Sáhí, but one hundred and thirty-five years afterwards a Saka again became king and introduced his era. Whilst corroborating the inscriptions as to the origin of the Saka era this legend introduces the modern explanation of the origin of the Vikrama era, which apparently first appears in the writings of the astronomers. Aryabhata, the oldest of the Indian astronomers, does not mention either the Vikrama or Saka era.² Varáha Mihira, who is supposed to have written towards the close of the sixth century, informs us that the *Sakendra-kála* commenced in the year 3179 of the Káli-yuga and again calls it as usual *Saka-bhúpa-*

Astronomers.

kála. Brahmagupta, who wrote in the seventh century, speaks of so many years having elapsed at the 'end of Saka.' Bhattotpála, writing in the middle of the tenth century, explains the phrase '*Sakendra-kála*' thus:— "Saka means king of the Mlechchha tribe and the time when they were destroyed by Vikramáditya deva is properly known as Saka." Again Bhaskarácharya, writing in the twelfth century, gives the years of the Káli-yuga "to the end of the Saka king," '*Saka nripánta.*' Even amongst the astronomers it was not until the seventh century that we find the slightest hint of the Saka era

¹ J. B. B. R. A. S., IX., 139, 154, and Wilford in *As. Res.*, IX., 150, &c. In an old Jaina work it is stated that 125 years after Vikrama having passed again the Sakas expelled Vikramaputra and conquered the kingdom. J. B. B. R. A. S., IX., 161.

² J. B. B. R. A., 8, VIII., 240: Weber's *Hist. Ind. Lit.*, p. 257.

being considered as commemorating the destruction of the Sakas, and not even then was the Vikrama era in use.

Dr. Bhau Dáji states that we do not meet with the assertion that the Saka era commenced with the destruction of the Sakas until the eighth century, and again that not a single inscription or copper-plate grant is dated in the Vikramáditya Sanvat before the eleventh century, and this era was introduced on the revival of Jainism in Gujrát.¹ Even then there is much confusion in its use,

Scholars. for the Svetambaras make their great teacher Mahávira live 470 years before

Vikramáditya, whilst the Digambaras make him live 605 years before Vikramáditya, the difference of 135 years being the exact time between the Vikrama and Saka eras. General Cunningham in one of his reports² writes:—"My impression is that Kanishka was the real founder of the era which is now known by the name of Vikramáditya. The Vikramáditya to whom tradition assigns the establishment of the era is now known to have lived in the first half of the sixth century A.D. I think it probable, therefore, that he only adopted the old era of the Indo-Skythians by giving it his own name. The earliest inscription that I am aware of dated in the Vikrama era is San. 811 or 754 A.D." Subsequently³ he refers to an inscription at Jhalra Patan dated in San. 748 and alters Tod's assignment of it to the Vikrama era on the grounds that:—"As the *Sanvat* of Vikramáditya does not appear to have been in use at this early period the true date of the inscription, referred to the Saka era, will be 135 years later or 826 A.D." No better authority could be quoted for the inscriptions in the Bengal Presidency. Dr. Burnell states that the Vikrama-Sanvat is all but unknown in southern India except in the Dakhin.⁴ Mr. Fleet shows that the date of Dantidurga (eighth century) is erroneously⁵ supposed to have been recorded in both the Saka and Vikrama eras, and he adds⁶:—"As far as my experience goes it

¹ J. B. B. R. A. S., IX., 146, 242.

² Arch. Rep., II., 68.

³ *Ibid.*,

p. 266.

⁴ Elements South Indian Palaeography, p. 78.

⁵ Ind. Ant.,

VIII., 181.

⁶ *Ibid.*, p. 127. This Vikramáditya is reported in his inscription to have said:—"Why should the glory of the kings Vikramáditya and Nanda be a hindrance any longer? He, with a loudly-uttered command, abolished that (era) which has the name Saka and made that (era) which has the Chálukya name," alluding to the foundation of the Chálukya Vikrama era which Mr. Fleet has shown to start from February 10, 1076. The mention of Vikramáditya here undoubtedly shows that the Vikrama era was known, but was not in use.

(the Vikrama era) was never used either before or after the time of Vikramāditya VI. (1075 A.D.) by the western Chalukyas and Chálukyas nor by the Ráshtrakútas, who temporarily supplanted them in western India; nor by the feudatories of those dynasties; nor by the eastern Chalukyas of Vengi." Dr. Bühler, however, quotes two early inscriptions assumed to be dated in the Vikrama era: (1) the Gúrjara grant¹ of Jayabhata of "the year 486, which seems to be dated in the Vikrama era"; and (2) the Páthan inscription² of Sanvat 802 recording the accession of Vanarāja which "can be referred to no other era." But in both these instances there is room for very much doubt. From all that we have gathered concerning the use of this era these apparent exceptions will, hereafter, be explained. With regard to the latter we have a note of the editor to say: "Having examined this latter (Vanarāja's inscription at Páthau) I am in doubt of its genuineness; possibly, however, it may be a copy of an older one; but if a copy may the mode of dating not possibly be an interpolation?" With regard to Jayabhata's grant the argument rests on certain assumptions that he must have been the son of Dadda I. and father of Dadda II. and that as his date is San. 486 and the records of Dadda II. are dated in Saka 380-417, the former date must refer to some other era and presumably to that of Vikramāditya. Now the genealogical portion of this date of Jayabhata has been lost and all the arguments advanced are so open to correction that we must decline to accept this solitary instance as evidence of the use of the Vikramāditya era at this early period. There is nothing to show why Jayabhata should depart from the practices of his predecessors and successors without expressly naming the new era. The third instance quoted by Dr. Bühler has been shown to be due to an error of the translator.³ The name Sáliváhana so often connected in modern times with the Saka era does not occur in this relation in any ancient records or manuscript.⁴ A Sátaváhana family reigned at Paithan on the Godávri when the Sinha dynasty ruled in Gujrát, and Gotamiputra or Sátakarni of this race is styled in an inscription as the 'establisher of the glory of the family of Sátaváhana'

¹ Ind. Ant., V., 110² *Ibid*, p. 119.³ Ind. Ant., VIII., 181.⁴ J. B. E. A. S., VIII., 237: Hemachandra makes Sátaváhana have the synonyms Hála, Sálaváhana, Sáláhana.

by reason of his conquests over the Sakas, Yavanas, Palhavas and his being the destroyer of the descendants of Kshaharáta. This power was of short duration, for Rudra Dáma in an inscription records his success against Sútakarni or Gotamiputra and the submission to him of the same countries that Gotamiputra, lord of Dakshinapatha, gives in his list of conquests. In the country where this Sútaváhana dynasty lived and ruled there is no attempt to assign to it any connection with the Saka era. We have now shown—

(a) that the Saka era was instituted by the Buddhist king Kanishka ; that it spread through his influence to all Buddhist countries :

(b) that there is no early mention of its being intended to mark other than the anointment or consecration of the Saka king until the seventh or eighth century :

(c) that the Vikrama era was not used until at least the eighth century, and consequently that the popular traditions assigning both eras to victories over the Sakas are incorrect, and that there is no real connection between the name of the founder of either era and Kumáon.

We shall now inquire how these traditions arose.

There are three different reasons given for the founding of the Vikramáditya era :—

(a) that it was an invention of the astronomers :

The origin of the Vikrama era.

(b) that it was to commemorate the freeing of the people from debt :

(c) that it was to commemorate a great victory over the Sakas.

In the Jaina *Rájávali-kathe*, a work written in ancient Kanarese,¹ it is recorded that :—“Then was born in Ujjayini, Vikramáditya, and he by his knowledge of astronomy having made an almanac established his own era from the year Rúdírodgári, the 605th year after the death of Varddhamána.” Now Varddhamána is the Jaina teacher Mahávíra, who died in B.C. 661, and consequently the Vikramáditya referred to lived in B.C. 56 and is one with

the author of the Vikrama era. The accurate Al Birúni notes that in his time the Vikrama era was used principally by astronomers and that the same class had another era used solely by them and which commenced in 665 A. D.

The Nepál annals tell us that :—“ At this time¹ Vikramájít, a very powerful monarch of Hindustán, became famous by giving a new Sambatasara, or era, to the world, which he effected by liquidating every debt existing at that time in his country. He came to Nepál to introduce his era here * * and after clearing off the debts of this country introduced his Sambat.” Hwen Thsang mentions² a Vikramáditya of Sravasti or eastern Oudh in whose reign lived a learned Buddhist named Manoratha, ‘*au milieu des mille ans qui ont suivi le Nirvána du Bouddha*’ or ‘*dans l’une des mille années qui ont suivi le Nirvána du Bouddha,*’ neither of which expressions is unfortunately intelligible. This Vikramáditya is said to have paid off the debts of his subjects and also to have oppressed the Buddhists and favoured the Brahmans and shortly afterwards lost his kingdom. Manoratha was evidently put to death by the Brahmans and Vasubandhu avenged him during the reign of Vikramáditya’s successor. Tárínátha states that Vasubandhu lived 900 years after Buddha and he was a pupil of Manóratha according to Hwen Thsang : so that the two authorities differ about the date. In Merutunga’s *Theraváli* it is stated³ that :—“ Gardhabilla’s son Vikramáditya having regained the kingdom of Ujjayini and having relieved the debt of the world by means of gold, commenced the Vikrama Sambat era.” And accounts are not wanting of petty rulers desirous of imitating Vikramáditya and starting an era of their own by paying off the debts of their people. We have two notable instances in the annals of Nepál and Kumaon. Of the third reason given for the establishment of the Vikrama era we have given sufficient examples. That there was a great Vikramáditya in the sixth century there can be no doubt, but that he had anything to do with the era which bears his name requires further proof. This Vikramáditya reigned shortly after Toramána, Raja of Kashmír, and in the Kashmír chronicles is specially praised for his liberality.

¹ Wright’s Nepál, p. 131 : the time will be discussed hereafter ; it was about the end of the sixth century

² Mém., I., 115.

³ J. B. B. R.

A. S., IX., 147, 148.

From Táránátha¹ we learn that on the death of the Buddhist king Gambhirapaksha, Sri Harsha, born in Maru, abolished the teaching of the Mlechchhas by massacring them at Multán (but a weaver of Khorasán spread it anew) and laid the foundations of great Buddhist temples in the kingdoms of Maru, Málava, Mewára, &c. This Sri Harsha was succeeded by his son Sila, who reigned about 100 years. The contemporary of Sila in the west was Vyákula, King of Ma-níha, who raised himself by force over Sila and reigned thirty-six years. This account calls to mind Hwen Tshang's description of Silá-ditya of Kanauj. From him we learn² that Silá-ditya ascended the throne in 610 A. D. His father was Prabháka-Vardhana and his eldest brother Rája Varddhana preceded him on the throne, but being slain by Sasánka, Raja of Karna-Suvarna, the minister Báni and the people placed the younger brother Harsha-Vardhana on the throne with the title Silá-ditya. He suffered reverses at the hands of Satyásráya or Pulakesi II., the western Chalukya Rajá of Badámi, as recorded by Hwen Tshang,³ Ma-twan-lin⁴ and in several inscriptions⁵ of Pulakesi himself and his successors. We know that Silá-ditya was a zealous Buddhist himself, but was very tolerant towards Brahmans : of his father we know but little. His grandfather appears to have been a Silá-ditya of Málwa and to have succeeded the great Vikramá-ditya there. Táránátha tells us that the Sri Harsha Vikramá-ditya, the exterminator of the Mlechchhas, was succeeded by a Sila, and Hwen Tshang shows that the successor of Vikramá-ditya was a favourer of the Buddhists. Sri Harsha lost his kingdom probably through the enemies that he gained by his victory at Multán. Over a hundred years later the Buddhists lost everything with Silá-ditya of Kanauj. It is his death that marks the true era of Brahmanical ascendancy. With it came the preponderance of Hindu revivalistic ideas in religion and missionaries poured forth from southern and western India and gave the last touches to the complete restoration of Brahmanism. In Mógadha, Nepál and Kumaon, the rulers for some time remained faithful to Buddhism, but the advocates of Sivaism and especially the apostles of Tantric beliefs were numerous and powerful, and it would appear that the great mass of the people followed them.

¹ La Comtesse *Vassilief*, p. 52 : *Ind. Ant.*, IV., 364.

² *Mém.*, I., 247.

³ *Ibid.* ⁴ *Ind. Ant.*, IX., 19.

⁵ *Ind. Ant.*, V., 72 ; VI., 76, 87, amongst others.

Al Birúni has, as we have seen, mentioned the great battle at Kohrúr between the city of Multán and the fort of Lúni, which can be no other than that noticed by Táránáth. The Apsar inscription referring to Dámodara Gupta states that:—"While gloriously dispersing at the battle of Maushari¹ the roaring line of elephants of the fierce army of the western Hunas, he fainted and selected the nymphs of heaven." In

Battle of Kohrúr.

other words Dámodara perished in the battle of Maushari. Thus we have confirmation of the statement that the Guptas on one side and Vikramáditya on the other were determined opponents of the Sakas. Mr. Fergusson² has arrived at the same opinion and states:—"What appears to have happened is this: about or before the year 1000 A.D., the struggle with the Buddhists was over and a new era was opening for the Hindu religion and a revival among the Hindu dynasties, and it was then determined to reform the calendar in a sense favourable to the new state of affairs. * * * In consequence of this, in looking back through their history for some name worthy to dignify the era and some event of sufficient importance to mark its commencement, they hit on the name of Vikramáditya as the most illustrious known and the battle of Kohrúr as the most important in his reign." They then established the era by adding ten cycles of 60 years each to the date 544 A.D., and thus arrived at B.C. 56. This is a possible explanation, but there is no absolute necessity for connecting the great Vikramáditya's victory at Kohrúr with the era that bears his name. It is more probable that it was introduced for astronomical purposes like another similar era quoted by Al Birúni and that this was done when Ujain was made the meridian of India. It did not come into general use³ even amongst astronomers before 1000 A.D. On this question Holtzmann⁴ pertinently remarks that:—"To assign him (Vikramáditya) to the first year of his era might be quite as great a mistake as we should commit in placing Pope Gregory XIII. in the year one of the Gregorian calendar, or even Julius Cæsar in the first year of the Julian period to which his name has been given, that is in the year B.C. 4713." There is absolutely nothing on record regarding the first century before Christ, not even excepting the

¹ J. A. S. Ben., XXXV., 1., 273. J. B. B. R. A. S., X., 60. ² J. R. A. S., XII., 274. Kohrúr was the capital of the Karlóki Fazáras, Arch. Rep., II., 19.
³ Kern in *Introd. Brihnt-Sanhita*, p. 8. ⁴ Weber's *Hist. Ind. Lit.*, p. 202.

Yueh-ti conquest of the Sakas in Kipin, that would indicate a victory in Brahmanical interests, and this Yueh-ti success is not likely to have been the cause of the Brahmans fixing on 57 B.C. as the initial year of the era. The great Vikramádivya may have displaced a Buddhist family in Malwa and he himself was succeeded by the philo-Buddhist Siládivyas, and Siládivya's namesake and descendant was again followed by Brahmanical rulers, and the facts concerning the troubles of this period were moved back to adorn the legendary but obligatory explanation of the origin of the two eras. Another suggestion is derived from a passage in Strabo, in which he states:—"The Sakæ occupied Baktriana and got possession of the most fertile tract in Armenia which was called¹ after their own name Sakasene." This colony was exterminated by the Persians, who in remembrance of their victory instituted an unusual festival called Sakæa. Many of the Indian legends concerning the great Vikramádivya contain facts connected with the history of the Kings of Persia, such as the surrender of the Roman Emperor and his being brought in chains to Ujain, which can only allude to the capture of Valerian by Shápúr in 260 A.D. The institution of the Sakæa is attributed to Cyrus by some, but in any case must be referred to a period not later than the second century before Christ.

Returning from this long digression we take up again the Saka

Further history of the Yueh-ti. history after the Turushka princes of Kashmír. The title 'Sháh' found on the coins of Basdeo is none other than the 'Sháhan-Sháhi' of the Gupta inscription on the Allahabad pillar and the 'Sáhanu-Sáhi' of the Jaina legend already quoted. It is also the 'Sháh' of the Katur kings of Kábul and the 'Shah-Katur' of the present chiefs of Kashkára. Basdeo is the last of the rulers whose name is found preserved in Greek letters. Returning to the Chinese writers,² we find that about 98 A.D., the chief of the Yueh-ti had so far established his power as to aspire to the hand of the daughter of the emperor of China in marriage. Ambassadors were sent to China on his behalf, but were stopped by the Chinese governor of Kashgar, who refused to allow them to proceed.~ The Yueh-ti king then sent a force of

¹ Borders on Albania.

² J. A. S. Paris, VIII., 257; J. A. S. Ben., VI., 61; Examen methodique des faits qui concernent le Thian-tchu ou l'Inde par M. Pauthier: Paris, 1840.

³ Beal's Fah Hian, p 197; Klaproth, Tabl. Hist., p. 124.

70,000 men to compel the passage of his envoys, but these returned discomfited and ever afterwards he remained tributary to them. There is little doubt that the vigorous proselytising set on foot by Kanishka and his successors led to much division and dissension amongst his followers and subjects, and their treatment of the local princes and distribution of the government amongst military officials did not tend to make their rule more acceptable. Taking advantage of these disorders the Kritiyas expelled the Turushkas from Kashmir and were in turn driven out by the Tukhara king of Himatala about 260 A. D., but again succeeded in recovering the throne of Kashmir. Up to the early part of the fifth century¹ the Indo-Skythian tribes were known as Skuthæ to the Greeks and Romans and as Turks to the Persians and Arabians, but about 420 A. D., these names give place to the term Haiatelitès or Haiateleh amongst the Arabs, Hephthalites amongst the Byzantine historians and Hephthal amongst the Armenians. Other variations are Euthalites, Ephthalites, Nephthalites, Atelites, Abtelites, who are one with the Cidaritæ of Priscus or the 'White Huns.' They were, according to DeGuignes, a race of Huns called Tele and first came into notice in their wars with the Sassanides, and eventually were conquered and absorbed by the Tu-khiu chief Tu-men, the founder of the eastern Turks, in the middle of the sixth century.² The Chinese annals also record³ that at the end of the second century after Christ, the eastern capital of the Yueh-ti lay to the west of the sandy desert of Foe-ty at Lou-kiang-chi, which Klaproth places near Khiva. To the north, the Yueh-ti country was bounded by the territory of the Ju-ju, who appear to be one with the branch of the White Huns, who were subsequently conquered by the Tu-khiu, once their servants and iron-workers. The Yueh-ti had brought a large tract of country under their sway and Po-lo (Bolor or Chitrál) some two hundred and ten leagues from the sands of Foe-ty became their western capital. Some time after their king called Kitolo (Katur) crossed the Hindu Kush (420 A. D.) and invaded Sind and subdued five kingdoms to the north of Kan-to-lo (Gandhára). At this time the Yueh-ti used chariots drawn by two or

¹ Reinaud, *J. A. S. Paris*, 6th Ser., I., 430; DeGuignes, *Hist. des Huns*, II., IV., 323.

² Julien, *J. A. S. Paris*, 6th Ser., III., 323.

³ Klaproth,

Tabl. Hist., p. 99, 124; Régnant, *Nouv. Mém. Asiat.*, I., 223; V. de Sa. Martin, *Les Huns blancs, ou Sphthalites*, Paris, 1849; Rawlinson's *Seventh great Oriental Monarchy*, p. 294.

four pair of oxen. During the time of the Goei dynasty (424-451 A. D.) a merchant came from the country of the great Yueh-ti to China and taught the Chinese the art of making coloured glass. The Yueh-ti or Yue-tchi were now called Ye-tha or Yi-ta, and their power extended from Khoten to the Oxus and their principal town was Bamian. Their country was called Ta-koue or the 'great kingdom' by the Chinese. Kitolo left his son at Peshawar, who established there a separate kingdom of the little Yueh-ti, whilst the great Yueh-ti still occupied Kábul. Still there are not wanting traces of the presence of the Huns in this part of the world. Cosmas in 525 A. D. gives the name Hunnie to the country lying between China and the borders of Persia and the Roman Empire. He calls the king of this country Gollas,¹ who had at his disposal two thousand elephants and a numerous cavalry, which show that Gollas must have had possession in some flat country and connections with India. Damodara² Gupta records his victory over the fierce army of western Hunas at Maushari in the previously quoted Apsar inscription, and from DeGuignes we learn that Soupharai or Sukha Rai, the Soucran (Sukha Ram) of Tillemont and Sukhra of the Arabs, who was governor of Zabulistán, Ghazni and Bost under the Sassanidan princes Balas and Kobad, defeated the White Huns at Bikand about 490 A. D. Still we cannot accept the conclusion of Reinaud and others that the Ephthalites were one with the Yueh-ti. We acknowledge the proximity of the Ephthalites in the countries west of the Kábul valley, where, according to Procopius, they had been settled for a long time and some of them sought service as mercenaries in the Persian army, and their chief may have become suzerain of the countries as far as the Indus. But as remarked by Reinaud:—

"On ne mieux comparer les vastes contrées de la Tartarie à cette époque qu'à une mer presque constamment en furie, et où les vagues ne font que changer de place suivant le vent qui souffle"

The Huns had no long lease of power, for by the middle of the sixth century, or twenty-five years after Cosmas' relation, the White Huns fell before the Takhii or eastern Turks.

¹ J. A. S. Paris, 6th Ser., I., 433; Gollas must be the same as Anowai, who ascended the throne in 320 A. D. and perished at the hands of Tuman. ² *Antes*, p. 425; this battle will fall in 380-400 A. D. if we take 310 A. D. as the initial date of the era, and in 300-450 A. D. if we take 167 A. D. as the initial date, and all indications show that the latter is the more probable date.

The Chinese pilgrims of whom accounts have come down to us in some detail afford us valuable aid in ascertaining who were the occupants of the Chinese travellers. trans-Indus country at this time. There are, however, certain difficulties connected with the topography of the region traversed by them which throw some doubt on the conclusions arrived at. Fortunately all of them—Fah Hian,¹ Sung Yun,² and Hwen Thsang³—visited the kingdom of Khie-pan-to bordering on Yárkaud. Fah Hian calls it Kie-cha and Sung Yun calls it Han-pan-to. Hwen Thsang on his return journey to China after crossing a mountain range to the south of the valley of Po-mi-lo (Pámír) entered the kingdom of Po-lo-lo celebrated for its gold washings, and after a difficult journey of 500 li arrived at Khie-pan-to on the Síta river, where lived a king of the China Suryadeva *gotra*, descended from an ancestor born of the sun-god and a Chinese princess: hence the family name. M. de St. Martin identifies the chief city of Khie-pan-to with Kartchu on the Yárkaud river. Fah Hian left Kartchu, ‘in the midst of the Tsung-ling mountains,’ on his journey from China, and proceeding westwards for a month crossed those mountains into northern India. He adhered to the incline of the same mountains for fifteen days in a south-westerly direction and reached the Indus (Sin-to), which he crossed and entered the country of Ou-chang or Swát. Here the river of Gilgit is clearly intended by the name ‘Sinto,’ for otherwise his statement is unintelligible. Sung Yun left Han-pan-to also on his outward journey from China and going west six days entered on the Tsung-ling mountains and after three days reached the city of Kieuh-yu and after three days more the Puh-ho-i mountains and then the kingdom of Poh-bo, to the south of which lay the great snowy mountains. Thence in the first decade of the 10th month (or two months after leaving Han-pan-to) he arrived in the country of the Ye-tha in 519 A.D. “They receive tribute from all surrounding nations on the south as far as Tieh-lo (To-li of Fah Hian and Tha-li-lo of Hwen Thsang, the modern Dárel); on the north, the entire country of Lae-leh (La-la, or it may be read Chih-leh): eastward to Khoten and west to Persia, more than forty countries in all.” He then alludes to the curious custom of the females wearing horns on their heads from

¹ Beal's Fah Hian, p. 14.² *Ibid.*, p. 181.³ *Mém.*, II., 200.

which drapery descended, and adds "these people are of all the four tribes of barbarians the most powerful. The majority of them are unbelievers. Most of them worship false gods." Of the country of Gandhāra (Peshawar) he writes:—

"It was formerly called Ye-po-lo. This is the country which the Ye-thas destroyed and afterwards set up Lae-lih to be king over the country: since which events two generations have passed. The disposition of this king was cruel and vindictive and he practised the most barbarous atrocities. He did not believe the law of Buddha, but loved to worship demons. The people of the country belonged entirely to the Brahman caste; they had a great respect for the law of Buddha and loved to read the sacred books, when suddenly this king came into power who was strongly opposed to anything of the sort and entirely self-reliant. Trusting to his own strength he had entered on a war with the country of Ki-pin respecting the boundaries of their kingdom and his troops had already been engaged in it for three years."

Sung-yun attended the royal camp to present his credentials and was very roughly received and when remonstrating with the king said:—"The sovereign of the Ye-tha and also of Ou-chang when they received our credentials did so respectfully." This would clearly show that the king of Gandhāra did not belong to the long established section of the Ye-tha, and the Chinese traveller also styles the subjects of the Gandhāra king Si-khiang or 'western foreigners.' According to Sung-Yun their conquest of Gandhāra took place only two generations previously, or say 470 A.D., and they were in 520 A. D. at war with Kábul. Fah Hian¹ refers to the Yueh-ti conquest of Gandhāra as having occurred 'in former times,' and he wrote in 402 A.D., so that this clearly was a different conquest from that mentioned by Sung Yun. Again, the conquest by Kitolo must be considered a third, and the reigning prince of Gandhāra in Sung-Yun's time probably belonged to some other division of the little Yueh-ti, who were then at war with the great Yueh-ti at Kábul.² Chitrál is moreover said to have belonged to Akeou-khiang in the time of the Goei dynasty (424-451 A.D.), so that we may consider the kingdom of Gandhāra

¹ Beal, *l. c.*, p. 37.

² General Cunningham suggests that the Gújars in Yaghistán and the plains are the representatives of the Kushan or Great Yueh-ti. Yaghistán is the name given to the country inhabited by tribes having independent institutions on our north-west frontier. Captain Trotter notes of these Gújars that they are said to be of Ját descent, though now Musalmáns. They are termed by the Patháns Hinoki, and are frequently met with in the pastoral districts where they tend the flocks of the Patháns, who are lords of the soil. "They are said to be descendants of the aboriginal inhabitants of the country." *Rep. G. T. S.*, 1878-79, p. 26. *Cunn. Arch. Exp.*, II., 72.

in 520 A.D., as an independent offshoot of the little Yueh-ti, whose principal seat was in Chitrál. The name Si-khiang is usually given to the Tibetans, and we know that the little Yueh-ti fled to Tibet in the first century before Christ.

Hwen Tshang on his journey from China visited Tukhara and then Bamian, where the people were zealous Buddhists. Further east in Kapisa in the Kábul valley there was a Kshatriya king (630 A.D.). Lamghán and Nagarahára were subject to Kapisa as well as Purushapura (Peshawar), the capital of Gandhára. This dynasty, however, could not have lasted long, for Al Birúni, as we have seen, distinctly states that the dynasty which preceded the Hindu rulers of Kábul was a Turkish one, and this can be no other than the ruling family of the great Yueh-ti. Buddhism prevailed throughout the whole valley of the Kábul river and in Swát, where the spoken language, though somewhat different, resembled that of India. The remains of numerous buildings existed which had been destroyed by Mihirakula, Raja of Kashmír, about 500 A.D., were seen by the Chinese traveller. Hwen Tshang then advanced as far as the sources of the Swát river and afterwards passed along the Indus into the country of Tha-li-lo (Darel), the former capital of Udyána or Swát. Thence he visited Pol-u-lo,¹ the modern Iskardo, where the people spoke a different language. All these indications corroborate the result of our previous investigations and show that an Indian people speaking an Indian language formed during the first seven centuries of the Christian era the main part of the population along the whole length of the Kábul valley and along the Indus up to Gilgit, where they were bounded by the Baltis on the east. We shall now examine the few notices that occur in Arabian and Persian writers.

The writings of the earliest Musalmán geographers² show that Kábul was divided between the dominant Musalmán historians. Turks and subject Hindua. Istakhri in

¹ There is some difficulty about this name and there are apparently two places that can answer to the name Bolor. According to Kiaproth (*Mag. As.*, i., 36), Chitrál was known as Bolor to the Chinese, and he notes that under the Hans it belonged to Ou-tchha (Udyána or Swát) and under the Goé (494-451 A.D.), it was the kingdom of Akeon-khiang, clearly a Tibetan dynasty and perhaps connected with the little Yueh-ti: *Cann. Arc. Geogr.*, 23, and *Progs. N. G. S.*, lii. The Pou-ho of Sung-Yun (*Beal*, p. 183) would more nearly approach Chitrál, and this will also be the Po-lo of Kiaproth's authorities quoted at p. 437.

² This paragraph is based upon Elliot, ii., 413-427.

915 A.D. writes:—"Kábul has a castle celebrated for its strength, accessible only by one road. In it there are Musalmáns and it has a town in which are infidels from Hind." In this statement he is followed by Ibn Haukul (942 A.D.), and his successors. Ibn Khallikán states that in the time of Yakúb-bin-Lais Kábul was inhabited by a Turkish tribe called Durán, on which Elliot remarks:—"It is possible that the term Durán may have a connection with 'darra' a hill-pass (valley), and that allusion may be made to the country north of Kábul, just in the same way as in modern times, the inhabitants of these same tracts are styled in Kábul, 'Kohistánis' or hill-men." The first invasion recorded was in the time of Abdullah, Governor of Irák, on the part of the Khalif Usmán (644 A.D.) He invaded Zaranj and Kish then considered part of Indian territory and the tract between Arukhaj (Arachosia) and Dáwar and in the latter country attacked the idolators in the mountain Zúr. Abdurrahmán subsequently advanced to Kábul about the year 661 A.D. and took prisoner Kábul Sháh, the ruler, who became a convert to Islám; but we learn "that the king of Kábul made an appeal to the warriors of India and the Musalmáns were driven out of Kábul. He recovered all the other conquered countries and advanced as far as Bust, but on the approach of another Musalmán army, he submitted and engaged to pay an annual tribute." In 683-4 the Kábulis refused to pay the annual tribute and their king was taken and killed. The war was continued by the king's successor, who was again compelled to yield submission to the Musalmáns, but "whenever opportunity offered, renewed efforts were made by the Kábulis to recover their lost independence." In 697-8 Ranbil¹ was chief of Kábul and reduced the leader of a Musalmán army who had invaded his territory to such straits that he was compelled to purchase his release. In 700-01 A.D. an avenging expedition under Abdurrahmán was sent by the celebrated Hajjáj against Kábul and was completely successful. The victor on his return was, however, coldly received by his master because he did not remain and take permanent occupation of the country. Exasperated at this, Abdurrahmán made a treaty with the infidels and promised them freedom from tribute should he succeed in overthrowing his master, and on

¹ This name is very variously given by different writers, Zentil, Zentil, Rathyl, Ratpál, and Wilson makes the name Rathpála.

the other hand the Kábul king agreed to afford him a refuge in the event of failure. Hajjáj was victorious and Abdurrahmán committed suicide when his host was about to deliver him up to the conqueror. Masúdi and other writers make the name Ranbal a dynastic royal title for the prince of Kábul and the territories between Hirát and Kábul. When Al Mamún was made governor of Khurásán he captured Kábul and obliged the king to become a Muhammadan. In 869-70 A.D., Yakúb-bin-Lais took Kábul and made its prince a prisoner. The king of Ar-Rukháj was put to death and its inhabitants were forced to embrace Islám. This conquest appears to have been more durable than any of the preceding ones, for we find the coins of Yakúb struck at Panjshír, to the north-east of Kábul in the years 874-75 A.D.

All the authorities quoted by Elliot, except Al Birúni, makes Kanak the last of the Katormán kings.

Al Birúni writes :¹—

"Le Kaboul était autrefois gouverné par des princes de race turque; on dit qu'ils étaient originaires du Tibet. Le premier d'entre eux, qui se nommait Barhtigin.* * le trône resta au pouvoir de ses enfants pendant à peu près soixante générations.* * l'ordre de ces règnes était écrit sur une étoffe de soie qui fut trouvée dans la forteresse de Nagarkot; j'aurais vivement désiré pouvoir lire cet écrit: mais différentes circonstances m'en empêchèrent. Au nombre de ces rois fut Kank; c'est celui qui a fondé le vihâra de Psychaver et dont le vihâra porte le nom.* * le dernier roi de cette dynastie fut Laktouseman. Le prince avait pour vizir un brahmane nommé Kalar.* * Il s'empara donc du trône et eut pour successeur le brahme Sámanda. Celui-ci fut remplacé par Kamalavá; puis vinrent successivement Bhima, Jayapála, Anandapála et Nardajaupála. Celui-ci monta, dit on, sur le trône l'an 412 de l'hégire (1021 A. D.) Son fils Bhimapála lui succéda au bout de cinq ans."

Kank can be no other than the Kanishka of the Turushka dynasty of Kashmír. Elliot identifies Kalar with the Syálapati of the bull-and-horseman type of coins found in the Kábul valley and which bear Brahmanical emblems as those of their predecessors, bore the elephant and lion, considered Buddhistic signs. The latter in turn differed from the earlier Indo-Skythian coins. We cannot further allude to the interesting results derivable from a study of these coins beyond that they show that the Turkish dynasty had

¹ Fragments Arabes, p. 167; Dowson's Elliot, II., 10. ² See Thomas' Prinsep, I., 330, and references.

become thoroughly Indianised. In 961 A.D. Alptegin established the Musalmán dynasty of Ghazni and henceforth the Hindus were the objects of bitter persecution, so that many became Musalmáns and others fled to the hills or to India. In the histories mention is made of the services rendered to Mahnúd of Ghazni by the Hindu renegade Tilak, who is also said¹ to have brought "all the Hindu Kators and many outsiders" under the rule of Sultán Masúd (1032 A.D.) At the time of Tímúr's expedition² against these Kators (1408 A.D.) their country extended from the frontiers of Kashmír to the mountains of Kábul and they possessed many towns and villages. One of their large cities was called Shckal and another Jorkal, which latter was the residence of the ruler. Tímúr approached the Kator country by the Kháwak pass from Indaráb; to his right lay the Kators and to the left the pagan Siyáh-Poshes. He describes the former as a people who drink wine and eat swine's flesh and who speak a language distinct from Turki, Persian, Hindi and Kashmíri, and their chiefs were called Uda and Udáshu or Adáshu. Tímúr further adds that most of the inhabitants were idolaters; they were men of a powerful frame and light complexion and were armed with arrows, swords and slings. In the time of Baber the country of Kábul was occupied by many and various tribes. He writes:—

"Its valleys and plains are inhabited by Túrks, Almáks and Arabs. In the city, and the greater part of the villages, the population consists of Tájiks. Many others of the villages and districts are occupied by Pasháls, Paráchie, Tájiks, Berekis and Afgháns. In the hill-country to the west reside the Hazáras and Nukderis. Among the Hazára and Nukderi tribes are some who speak the Mughal language. In the hills to the north-east lies Káfiristán and such countries as Kator and Gebrek. To the south is Afghánistán. There are eleven or twelve different languages spoken in Kábul; Arabic, Persian, Túrki, Mughal, Hindi, Afgháni, Pasháli, Paráchi, Geberi, Bereki and Lamgháni."

The Parácha Musalmáns of the Indus valley appear to represent the Baniyas of the plains and have a dialect of their own. Pashu is spoken in the valley of the Kunar river and Hindi will probably represent the language of the Káfirs and people of Kashkára. In the reign of Jahángír (1619) the Sarkár of Paklí is described as bounded on the north by the Kator country, on the south by the Ghakkar country, on the east by the Kashmír mountains

¹ Dowson's Elliot, II., 122, 123.

² Ibid., III., 400.

³ Erskine's

Baber, I., 221.

and on the west by Attak-Banárás. Paklí was traversed by Jahángír on his way to Kashmír and lay between the Indus and the Kishanganga. At this time, the country to the north was known as Kator comprising Gilgit, Darel and Chitrál.

From the preceding extracts we gather that Katúra or Kator was the name given to the reigning family in Kábul for many generations, and that they were so Indianised as to be regarded as Hindus. They, moreover, ruled over an Indian race inhabiting the country throughout the highlands from Lamghán to Baltí. We shall now turn to the people inhabiting this region at the present day. We find three great groups of tribes in this tract, the Kho division between the Indus and the Hindu-kush, the Shins on the upper Indus and surrounding all, Muhammadans of different races speaking Pushtu or Persian or Túrki. The Khos comprise the mass of the Chitrál population, the Siyáh-Posh of Káfiristán and the people of Lamghán and represent the Khosas or Khasas of whom we have heard so much. The upper part of the Kashkára valley is called Túri-kho, the middle is known as Múl-kho and the lower as Lud-kho and the language spoken is called Khawár, the Arniya of Dr. Leitner. These Khos are the oldest inhabitants and are styled '*Faktr-mushkin*' by the ruling class. The latter are descended from the common ancestor of the governing family and are generally spoken of as Sáh Sangallie, next to whom come the Zundre or Ronos and then the Ashimadek or food-givers. As already mentioned the Khushwak-tiya branch of the Katúres reigns in Yassan and the Sáh or Sháh Katúre branch in Chitrál. It would appear that the native rulers of Gilgit, Iskardo and Kashmír were supplanted by Musalmán adventurers in the fourteenth century and those of Kashkára by others in the sixteenth century. The local tradition in Chitrál is that it was governed by 'a Rais who is said to have been of the same family as the rulers of Gilgit before the introduction of Muhammadanism.' The last local ruler of Gilgit was the Ra Sri Buddhadatta of the Sáh-rai family and the old name of that valley was Sárgin. There is little doubt that in the name Sábrais we have the Sáh or Sháh of Sáh Katúre and its continuation to our own day of the 'Sháh' in the inscriptions of Váudeva and the Sáhána-Sáh of inscriptions and legends. The members of the present ruling family

are intruders and it is to the Ronos we must look for the representative of the old princes. Major Biddulph¹ tells us that :—

“The Ronos rank next to the ruling family in every country in which they are found. The Wazirs are generally though not always chosen from amongst the Rono families. They exist in small numbers in Nagar, Gilgit and P'unyál, gradually increasing in numbers as one travels westwards through Yassan, Mastó-j and Chitrál, in which places there are said to be altogether over 300 families. In Nagar and Yassan they call themselves Hara and Haraiyo and in Chitrál, Zundra, but they all claim to be of the same stock. Some exist in Wakhán and Sirikol, where they are called Khaibar-khatar, and in Shighnan, where they are called Gaibalik-khatar.”

The Sáh Sangallie class in Chitrál give their daughters to the Ronos, ‘who being descended from a former dynasty of rulers of the country are regarded as of royal blood.’ Surely in these we have the representatives of the Yueh-ti rulers of Kashmír who called themselves ‘*Korano*’ on their coins, and of the Kator kings of Kábul, the last of whom was displaced by his Brahman minister; whilst the actual *de-facto* ruler of Kash-kára retains the ancient title of ‘Sáh Katúre.’

From Major Biddulph² we learn that “the name ‘Dárl’ is not acknowledged by any section of the Recent travellers. tribes to whom it has been so sweepingly applied. In a single instance the term is applied by one tribe to some of their neighbour.” The correct name for the principal tribe inhabiting Gilgit, Astor and the Indus valley is Shin or Shing, possibly the Chinas of the Paránas. They have pleasing features, hair usually black, but sometimes brown, complexion moderately fair: the shade being sometimes light enough, but not always, to allow the red to shine through; eyes brown or hazel and voice rough and harsh. Mr. Drew gives the divisions which exist at the present day and which he says ‘may be called castes, since they are kept up by rules more or less stringent against the intermarriage of those who belong to different divisions.’ With both Kho and Shin are found Gujars, Kremins and Doms. The last is a servile caste corresponding to the Khasiya Doms in Kumaon and performing similar duties. The habits and customs of both Khos and Shins and the language spoken by them all show their Indian origin, though they have been

¹ ‘Tribea of the Hindu-coosh,’ p. 94, etc.

² *Ibid.*, p. 2, 156.

for some centuries converts to Islám. There is still one other considerable section of the inhabitants of this region to be mentioned. Their language betrays a Turanian origin and they call themselves Búrisho or Wúrshik and are known to their neighbours as Yesh-kun. They form the entire population of Hanza, Nagar and Pun-yál, and nearly all the population of Yassan besides being numerically superior in Gilgit, Sai, Darel and Astor, and their language is called by themselves Búrishki and by others Khajúna. Major Biddulph¹ rightly, we think, connects the name 'Búrisha' with 'Purusha-pura,' the name of the capital of the Little Yuesh-ti in the fifth century of our era.²

The Moollah who visited Chitrál in 1874 saw three several pagan Káfirs from various parts of Káfiristan and describes their appearance as so like the Chitrális both in features and dress and in the way of arranging the hair of their faces that it would be impossible to distinguish them apart were it not for the fact that the Káfirs all wear a tuft of hair on the crown of the head like the Hindús, and this, too, is only visible when they remove their head-dress.³ In 1841, Dr. Griffiths saw some of the Káfir inhabitants of Kattar and describes them as a fine-bodied people and very active and not very fair. The chiefs were much fairer than their followers and in the expression of face and eyes, Aryan. According to Major Biddulph, the Siyáh-Posh are separable into three tribes conformable to the natural divisions of the country, the Rum, Wai and Bush. The Rum-galis or Lum-galis border on Laghmán and Kábul and may probably be referred to the Romakas of the Puránas. The Wai-galis inhabit the valleys extending south-east to the Kunar river at Chaghán Sarái, and the Bush-galis occupy the valleys to the north. They speak a language having an Indian basis; their principal deities are Imbra (Indra) and Mani (Manu), and the men shave their heads in Indian fashion, merely leaving the ordinary top-knot. The women of the Bush-galis wear a curious head-dress consisting of a sort of black cap with lappets and two horns about a foot long made of wood wrapped round with cloth and fixed to the cap. This custom is noticed by Hwui Seng⁴ when writing of the Ye-tha country which was met

¹ *L. c.* p. 36, 160.² *Antea*, p. 428.³ Trotter's Report, 1873-75, p. 25.⁴ Beal's *Fah-Hian*, p. 185 : about 520 A.D.

with on leaving Poh-ho : there the royal ladies wore 'on their heads a horn in length eight feet and more, three feet of its length being red coral. As for the rest of the great ladies they all, in like manner, cover their heads, using horns, from which hang down veils all round like precious canopies. * * The majority of them are unbelievers and most of them worship false gods.' Hwen Thsang has¹ a similar notice regarding the Tukhára country of Himatala, the ruler of which was so friendly to the Yueh-ti Turushkas of Kashmír as to avenge their downfall.²

Taking into consideration the very different influences to which the Khos of Kashkára and the Khasiyas of Kumaon have been subjected for many centuries,

Conclusions. it is not curious that their habits and customs at the present day should widely differ. The fortunes, too, of their rulers have varied. Syáلكot in the Panjab is supposed to have been founded by Sáliváhan, whose son Rásálu was succeeded by Raja Hudi, chief of the Syálas.³ The chiefs of Nagarkot or Kangra were also closely connected with the Yueh-tis and Al Biráni mentions that they possessed a genealogical tree of the Turkish rulers of Kábul written on silk.⁴ The chiefs of Lohara or Sáli, a petty hill

¹ Mém. II., 197. ² *Antea*, p. 427. The following references will furnish all the information known about these so-called 'Káfrs':—

Elphinstone, M.—Account of the kingdom of Cabul, II., 375-387 : London, 1842.

Burnes, A.—Travels into Bukhara, II., 210; London, 1834. J. A. S. Ben., II., 305 : VII., 325 : Cabool, p. 306, 318, 381.

Vigne, G. T.—Personal narrative of a visit to Guzni, Kábul and Afghanistan, p. 331 : London, 1840.

Masson, C.—Narrative of various journeys in Balochistan, Afghanistan and the Panjab, I., 191 : London, 1842.

Wood, J.—Narrative of a journey to the source of the river Oxus in 1836-38, p. 295 : London, 1841.

Móhan Lal.—Siah-posh tribe. J. A. S. Ben., II., 305.

Raverty, H. G.—Language of the Siah-posh Káfrs, J. A. S. Ben., XXIII., 369; and Notes on Káfristan, *Ibid.* XXVIII., 317.

Trampp, Dr.—Language of so-called Káfrs, J. R. A. S., XIX., 1.

Tanner, Col.—H. Proc. R. G. S., III., 378, 311, 498.

Biddulph, Major.—Tribes of the Hindu Koosh, p. 126 : Calcutta, 1861.

Prinsep, J., I., 216, Thomas' edition

Erskine, W.—History of Baber, I., 321.

Trotter, Capt.—Report G. T. Survey, 1873-75, p. 33 : *Ibid.*, 1876.

Elliott, H.—Dowson's edition, III., 401, 407, 481.

Reinoud, M.—Fragments Arabes et Persanes, p. 126. Mém. Ser l'Inde, p. 70-82, 179.

Reinoud, A.—Nouveaux Melanges Asiatiques, I, 223.

Out of all these writers only Elphinstone, Masson, Burnes, Trampp and Biddulph have seen Káfrs and no European has as yet entered their country.

³ *Cann. Arch. Rep.*, II., 31 : J. A. S. Ben., XXIII., 80.

⁴ *Cann. Arab*

Rep. V., 155 ; *antea*, p. 433.

state of the Gilgit or Sárgin valley, who succeeded Didda on the throne of Kashmír in the eleventh century, also claimed descent from Saliváhana, but were none the less Sábhis of the Turushka stock.¹ In A.D. 700, both the king of the Turks and the king of Kábul are said to have borne the same name, which was also common to the kings of Kashmír.² Unfortunately this name comes to us in many guises, but if we accept the form Raubil as standing for Ratnapála we have another link in the chain. Again the existence of a Surya-deva Raja, sprung from the sun-god, and therefore of the solar-race, in the hill state³ of Khiepan-to (Sirikol) in the seventh century, shows the influence of Indian ideas far beyond the limits assigned ordinarily to the Indians themselves. We may now conclude that we have carefully and fairly made out a connection between the dynasty ruling west of the Indus known as Katúres and the Kumaon Katyúras and between the people of Kumaon and the Kunets of Kunaor and the Khos of Kashkára. We find, wherever the Khasas occur, the Doms live with them as their servitors and recognize in these Doms the descendants of the Dasas of the Vedas, inhabitants of Upper India even before either Nágas or Khasas appeared. The time has passed for attributing to the small immigration of the Aryans that has given us the Vedas, the origin of all the races who are to-day assumed to be of Aryan blood and even for holding that all so-called Rajpúts are of Aryan descent. Many of our Rajpút clans can be traced back to Baktrians, Parthians and Skythians when the facts now fast accumulating are closely examined. We have seen already how the Aryan writers themselves acknowledge that in many cases all the castes have a common origin. Many of the purer race did not accept the advanced ideas of their priest-led brethren and are accordingly contemptuously classed amongst the outcasts because 'they knew no Brahmans.' The Aryan immigrants themselves found on their arrival in India that other members of their race had preceded them. These from admixture with the so-called aborigines had degenerated from the primitive type in customs and perhaps also in features. Their religion also was affected by this union for, as we shall see hereafter, the Pasupati cult had its origin amongst the non-Brahmanical tribes, and from this sprang the

¹ Troyer's R. T., VI., 367; VII., 1293.
² Mém. I.

³ Cunn. Arch. Rep., II., 74.

terrible forms of Siva which have taken such hold in comparatively modern times of the popular religious thought of India. The influence of the Vaidik Aryans is better shown in the language and literature of modern India and the modifications of the physical characteristics of the various tribes with which they have come in contact. Professor Huxley, as quoted by a recent writer, says, "the Indo-Aryans have been in the main absorbed into the pre-existing population, leaving as evidence of their immigration an extensive modification of the physical characters of the population, a language and a literature."

We may, therefore, assume for the Khasiyas an Aryan descent in the widest sense of that term much modified by local influences, but whether they are to be attributed to the Vaidik immigration itself or to an earlier or later movement of tribes having a similar origin, there is little to show. It is probable, however, that they belong to a nation which has left its name in various parts of the Himálaya, and that they are one in origin with the tribes of the western Himálaya whom we have noticed. This nation in

Khos and Khassas are course of time and chiefly from political
sprung from one race. causes and the intrusion of other tribes was
broken up into a number of separate peoples, some of whom have
become Muhammadans, others Buddhists and others again, as in
these hills where the facility of communication with the plains
and the existence of the sacred shrines in their midst rendered
the people peculiarly open to Brahmanical influence, became
Hindús in religion, customs and speech. As we approach the
Aryan ethnical frontier in the Himálaya to the west, Turks, Tátars,
Iranians, and Aryans profesing the three great religions meet and
as we near the ethnical froutier in the east, Tibetans and Hindús
are found together in the debatable ground, as we may call Nepál.
Further east Tibetans alone prevail until we get to the shading off
between them and the monosyllable-tongued Indo-Chinese tribes
in farthest Asúm. Whatever may have been their origin, the
Khasiyas have forgotten it and influenced by modern fashion have
sought to identify themselves with the dominant Hindu races as
the Hindu converted to Islám and called Shaikh seeks to be known
as a Sayyid when he becomes well-to-do in the world. In this
respect the Khasiyas do not differ from any other hill tribe brought

under Brahmanical influence. All see that honour, wealth and power are the hereditary dues of the castes officially established by the authors of the *Mánava Dharma-sástras* and seek to connect themselves with some higher than their own. Even at the present day, the close observer may see the working of those laws which have in the course of centuries transmuted a so-called aboriginal hill-race into good Hindús. A prosperous Kumaón Dom stone-mason can command a wife from the lower Rajpút Khasiyas, and a successful Khasiya can buy a wife from a descendant of a family of pure plains' pedigree. Year by year the people are becoming more orthodox in their religious observances and the fanes of the *diu minores* are becoming somewhat neglected. What little historical records exist show us great waves of invasion and conquest over all Upper India from the earliest times and bitter dynastic and religious struggles. The many different tribes who joined in these wars have not been superimposed without disturbance one on the other like deposits of inorganic matter, so as to enable us like the geologist at once to declare the order of their coming from their ascertained position, but rather they are in the position of a range of mountains full of faults, inversions and folds. Following out this simile the earliest inhabitants had to receive conqueror after conqueror, and accommodate themselves to the deposit left behind, by being crumpled up so as to occupy less space or by being cracked across so as to allow some parts to be pushed above others. We find that this is what must have taken place. In some cases the intruding power was strong enough to absorb or to enslave the conquered race, in other cases these have been pushed onwards from their original seats, and again in other cases they have been divided into two. From Tibet on the north and the plains on the south intruders have wedged themselves in or been superimposed on the Khasiya race, chemically assimilating as it were the subject race in places by intermarriage and in others showing a purely mechanical admixture. For these reasons it is impossible to trace any unbroken direct connection between the *Katúres* and *Khos* of *Kashkára* and the *Katyúras* and *Khasas* of *Kumaon*, but the affinity is none the less established on as good grounds as any other question connected with early Indian history and may be accepted until other and better evidence comes to light.

CHAPTER V.

HISTORY—(contd.).

CONTENTS.

Early history from local sources. Garhwál Rajas. Hwen Tsaang. Brahmapura. Tradition regarding Lakhanpur. The golden land. The colonisation of Juhár. The Amazonian kingdom. Tibet from Chinese sources. Govissna. Annihilation of Buddhism. Sankara Acharya. Sankara in Nepál. Katyúris or Katyúras. Káritikeyapura. Inscriptions. Pandukeswar plates. Second series of Rajas. Facsimile of one of the plates. The Kumaon and Pála plates. Localities. Countries conquered. Bhágalpur plate. Tibetan records. Sáráth inscription. Pála dates. Decline of the Katyúris.

In the tract stretching along the foot of the hills from the Early history from local sources. Sárda to the Ganges and thence through the Dún to the Jumna we have traces of an ancient civilisation all record of which has vanished. In the Tarái in the depth of what appears to be primeval forest are found solidly-built temples containing stones richly carved and ornamented and surrounded by ancient plantations of mango and other fruit trees. The modern town of Rámnagar has been built from materials derived from the ruins at Dhikuli, a little higher up on the right bank of the Kosi river and which once, it is said, under the name of Vairát-pátan or Virátnagar,¹ was the capital of a Pándava kingdom subordinate to that of Indraprastha long before the name Katyúri was heard of. The numerous remains of tanks and scattered buildings are also attributed in popular tradition to the 'Pandub log.' Further west at Pánduwála near the Láldháng chauki are the remains of an ancient town and temples of which many of the finer carvings have been taken away to Gwalior and Jaipur. At Lúni Sot also we have some fine stone-work and eight miles to the west near the ruined village of Mandhal in the Chándi Pahár some six miles east of Hardwár are the remains of an old temple containing some

¹ This must not be confounded with the Bairát in which the Pándavas resided during their exile, although the Kumaonis have transferred the whole epic to their own hills, making the Lohughát valley the site of Kurukshetra: for the true Bairát, see Arch. Rep., II., 246, and VI., 91.

good carvings in a high state of preservation.¹ They represent both Buddhist and Brahmanical subjects : amongst the former the tree and deer found on the coins of Krananda that have been discovered at Bahat in the Saháranpur district and amongst the latter the bull of Siva and the image of Ganesha. There is also a representation of the Trimúrtti or triune combination of Brahma, Vishnu and Siva which seems to be common amongst these monuments and which doubtless belongs to the later development of Hinduism. Numerous mango groves and the remains of tanks are also found amid the forest along the foot of the inner range in the Dún, similar in all respects to those found in the Taráí. If to these material evidences of an early civilisation we add the testimony of local tradition and those scraps of general tradition floating amidst the stories recorded by the early historians, we may safely assert that at a very early period the country along the foot of the hills supported a considerable population living in towns, the remains of which show a fair advance in the arts of civilisation. Amongst the general traditions regarding these hills we have seen that the legend connecting the Saka king and founder of the Saka era with Kumaon has no support from established facts. The local collections of legends regarding the places of pilgrimage in Kumaon and Garhwál afford us no aid for their political history. All the information before us would lead us to conclude that the name 'Kumaon' cannot have attained to any significance before the fifteenth century. Indeed it was not until the reign of Rudra Chand, in the time of Akbar, that much was known to the Musalmán historians concerning these hills, and it is in the writings of the Musalmán historians of that period that we find the name first applied to the hill country now known as Kumaon and Garhwál and that the stories regarding its early importance first find currency. Whatever historical truth these stories contain must be connected with western Kumaon and Garhwál, both of which can boast of a fairly ascertained history far exceeding in antiquity anything that can be assigned to the tract which apparently originally received the name Kumaon.

¹ See General Cunningham's notes on the ruins of Moradhvaja's fort six miles north-east of Najíbabad, containing Buddhist remains, and on those called Chatarbháj in the very heart of the Taráí midway between Rampur and Na'mi Tái and about six miles to the east of the high road. The ruins lie to the east of the villages of Mahóli and Dalpur and between the Jónár Nádí and the Rakroia Nádí and extend over several miles. The remains of a fort, tank and wells are visible. Arch. Rep., II., 280. See also J. A. S. Soc., XXXVI., 1., 184.

Our first step, therefore, is to ascertain what is known concerning the early history of Garhwál and western Kumaon, and for this purpose, however dry the task may be, we must collate and compare the lists of the rulers of Garhwál, for beyond these bare lists we have no written records whatsoever relating to its history. One of the earliest of these lists is that obtained by Captain Hardwicke in 1796 through Pradhuman Sáh, then reigning at Srinagar and published by him in his '*Narrative of a Journey to Srinagar*,' in the first volume of the *Asiatic Researches* :—

1.—Hardwicke's list of Garhwál Rujás.

Names.	Number reigned.	Names.	Number reigned.	Names	Number reigned.
1. Bogh-Dhurt, the first Raja, between whose reign and Adey Paal 900 years passed, of which no records exist,	900	23. Sooret Singh ...	72	48. Anund Narain...	42
2. Adey Paal ...	50	23. Mahah " ...	75	49. Herry " ...	45
3. His son Bejeý Paal ...	60	24. Anoop " ...	59	50. Mahah " ...	33
4. Laak Paal ..	55	25. Pertaub " ...	29	51. Renjeet " ...	31
5. Dehrm " ...	65	26. Hurree " ...	39	52. Raamroo ..	33
6. Kerrem " ...	70	27. Jaggen Naat ...	55	53. Chirsturoo ..	49
7. Narain Deo ...	72	28. Byjee " ...	65	54. Jeggeroo ..	42
8. Hurr " ...	45	29. Gookul " ...	54	55. Herroo ..	32
9. Govin " ...	49	30. Raam " ...	75	56. Futteh Sah ..	39
10. Ram " ...	51	31. Goopee " ...	82	57. Dooleb " ...	50
11. Runjeet " ...	53	32. Lechme " ...	70	58. Purteet " ...	35
12. Inder Sain ..	35	33. Preelm " ...	61	9. Lallet " ...	40
13. Chunder " ...	39	34. Saada Nand ...	65	Who died in 1781 and left four sons, was succeeded by the eldest,	
14. Mungul " ...	32	35. Perma " ...	62	60. Jakert Sah, and was succeeded by his brother the present Rajah ...	2½
15. Choora Mun ...	29	36. Maha " ...	63	61. Purdoo Maan Sah.	
16. Chinta " ...	33	37. Sooka " ...	61		
17. Pooren " ...	27	38. Smbu Chand ..	59		
18. Birk-e-Baan ...	79	39. Tarra " ...	44		
19. Bir " ...	81	40. Maha " ...	52		
20. Soorey " ...	79	41. Goolab " ...	41		
21. Kerreg Singh ..	60	42. Ram Narain ...	59		
		43. Gobind " ...	35		
		44. Lechmen " ...	37		
		45. Jegget " ...	32		
		46. Mataub " ...	25		
		47. Sheetaub " ...	37		
				Total of years ..	3774½

The second list is taken from an official report of the year 1849 and is the same as that accepted by Mr. Beckett, the settlement officer

in an old report on Garhwál. It gives several details which are not found in the other lists :—

2 —Beckett's list of Rajas of Garhwál.

Number.	Names.	Reign.	Age at death.	Year of death. San.	Number.	Names.	Reign.	Age of death.	Year of death. San.
1	Kanak Pál ...	11	51	786	28	Lakhan Deo ...	23	32	1277
2	Syám Pál ...	26	60	782	29	Ananta Pál II. ...	21	29	1298
3	Padu Pál ...	31	45	813	30	Purab Deo ...	19	33	1317
4	Abigat Pál ...	25	31	838	31	Abhaya Deo ...	7	21	1324
5	Sigal Pál ...	20	24	858	32	Jairám Deo ...	23	24	1347
6	Ratna Pál ...	49	68	907	33	Asal Deo ...	9	21	1356
7	Sáíl Pál ...	8	17	915	34	Jagat Pál ...	12	19	1368
8	Bidhi Pál ...	20	20	935	35	Jit Pál ...	19	24	1387
9	Madan Pál I. ...	17	22	952	36	Ananda Pál II. ...	28	41	1415
10	Bhagti Pál ...	25	31	977	37	Ajai Pál ...	31	59	1446
11	Jaichand Pál ...	29	36	1006	38	Kalyán Sáh ...	9	40	1455
12	Prithi Pál ...	24	40	1030	39	Sundar Pál ...	15	35	1470
13	Madan Pál II. ...	22	30	1052	40	Hansdeo Pál ...	13	24	1483
14	Agasti Pál ...	20	31	1072	41	Bijai Pál ...	11	21	1494
15	Surati Pál ...	22	26	1094	42	Nahaj Pál ...	26	45	1530
16	Jayat Singh Pál ...	19	30	1112	43	Balohadra Sáh ...	25	41	1555
17	Ananta Pál I. ...	16	24	1129	44	Mán Sah ...	20	29	1575
18	Ananda Pál I. ...	12	30	1141	45	Syám Sáh ...	9	31	1584
19	Vibhog Pál ...	18	22	1159	46	Mahipat Sáh ...	25	65	1609
20	Subhajan Pál ...	14	20	1173	47	Prithi Sáh ...	32	70	1671
21	Vikrama Pál ...	15	24	1188	48	Medini Sáh ...	46	62	1717
22	Vichitra Pál ...	10	28	1198	49	Fateh Sáh ...	48	51	1765
23	Hansa Pál ...	11	10	1209	50	Upendra Sáh ...	1	22	1768
24	Son Pál ...	7	19	1216	51	Pradipt Sáh ...	33	70	1829
25	Kádil Pál ...	5	21	1221	52	Lalipat Sáh ...	8	30	1837
26	Kámdeo Pál ...	15	24	1226	53	Jaikarat Sáh ...	6	23	1843
27	Salakhan deo ...	18	30	1254	54	Fradhaman Sáh ...	18	29	1861

The compiler of this list makes Kanak Pál come from Gujrat and the seventeenth had his head-quarters at Maluwa-kot, the twenty-first at Ambuwa-kot and the twenty-fourth in the Bhilang valley. Numerous Khasiya rajas owed allegiance to Son Pál, who held sovereign sway over all western Garhwál and commanded the pilgrim route to Gangotri. A cadet of the Panwár house of Dháranagar came on a pilgrimage to the holy places in the hills and visited Son Pál on his way. The latter had no son and was so pleased with the young prince that he gave him his daughter in marriage and part of parganah Chandpur as dowry. The Dháranagar prince appears to be the Kádil Pál of this list (25), and it was his descendant Ajai Pál who first attempted the conquest of Garhwál and, according to this list, founded Srinagar. The story of the Panwár prince

resembles in many respects the tradition regarding Som Chand in Kumaon, mentioned hereafter. A third list is given by Mr. Williams and differs in some respect from Mr. Beckett's list:—

3.—Williams' list of Garhwál Rajas.¹

1. Kunk Pál.	17. Sooruj Pál.	33. Jitang Pál.
2. Bisheswar Pál.	18. Jeyut Pál.	34. Kalyan Pál.
3. Suwát Pál.	19. Aneurudo Pál.	35. Ajy Pál.
4. Poorun Pál.	20. Vibhog Pál, II.	36. Anant Pál.
5. Ameegut Pál.	21. Gugyun Pál.	37. Soolar Pál.
6. Shuktee Pál.	22. Vikram Pál.	38. Senj Pál.
7. Reteo Pál.	23. Vichitra Pál.	39. Vijey Pál.
8. Sáliváhan Pál.	24. Hans Pál.	40. Bahádur Pál.
9. Mudun Pál.	25. Suvarn Pál.	41. Sital Sabal.
10. Bidhee Pál.	26. Kauteekripá Pál.	42. Man Sáh.
11. Bhugdat Pál.	27. Kandeo Pál.	43. Sám Sáh.
12. Vibhog Pál.	28. Sulukshun Deo.	44. Mahipati Sáh.
13. Jeychander Pál.	29. Mahalukshun Deo.	45. Prithvi Sáh.
14. Heerut Pál.	30. Sut Pál.	46. Medini Sáh.
15. Mudun Suháee.	31. Apoorub Deo.	47. Fateh Sáh.
16. Abeegut Pál.	32. Jey Deo.	

The fourth list was obtained by me through an Almora Pandit and may be called the Almora list:—

4.—Almora list of Garhwál Rajas.

1. Bhagwán Pála.	24. Vikrama Pál.	48. Sahaja Pála.
2. Abhaya "	25. Vijaya "	49. Vijaya " II.
3. Bishesha "	26. Hansa "	50. Balbhadra Sáh.
4. Karna "	27. Sona Pál, 1209 A.D.	51. Situla "
5. Kshema "	28. Kánha Pál.	52. Mán Sáh, 1547 A.D.
6. Vyakta "	29. Sandhi "	53. Séma "
7. Suratha "	30. Sulakshana "	54. Dularám Sáh, 1580 A.D.
8. Jayati "	31. Lakshanaadeva "	55. Garbhubanjan
9. Párna "	32. Alakshanaadeva "	Mahipati Sáh, 1625 A.D.
10. Aryakta "	33. Ananta "	56. Prithi or Prithvi
11. Sáliváhan "	34. Abhildeva "	Sáh, 1640 and 1660.
12. Sangita "	35. Abhayadeva "	57. Medini Sáh.
13. Maupita "	36. Ajaya "	58. Fateh or Fateh
14. Ratna "	37. Ajayadeva "	pat. Sáh, 1684-1716
15. Madana Pál I.	38. Asápratápa "	59. Upendra ² Sáh, 1717,
16. Vidhi Pál.	39. Jayadeva Pála.	60. Pradip ² " 1717-72.
17. Bhagadatta Pál.	40. Ganitadeva "	61. Lalat or Lalita Sáh, 1773-
18. Jaychandra "	41. Jitáritradeva "	80.
19. Kirthi "	42. Kalyána "	62. Pradhuman ² " 1785-
20. Madana " II.	43. Ana "	1804.
21. Anubuddha Pál.	44. Dipánta "	63. Sudarshan " 1815.
22. Vibhogita "	45. Priyanihára,	64. Bhawáni "
23. Subadhán Kot.	47. Sundara	

The sixty-fifth in descent was Pratáp Sáh, whose son now rules in Tihri or native Garhwál. The dates given are those that have been gathered from grants now existing in the local

¹Memoir of Dehra Dán, 81. He notes:—"It should be borne in mind that the writer's list does not profess like Hardwicke's to give a lineal succession of kings; each name is only supposed to represent the power paramount in the country for the time being." The grounds for this statement are not given.

²Dhulip reigned during a part of the year 1717.

³Jayakrit Sáh reigned from 1780 to 1785.

official records. All accounts concur in stating that Ajaya Pál was the first who attempted to reduce the independent Khasiya rajas under his sway, and, as we shall show hereafter, he cannot be placed earlier than 1258-70 A D. The above are the very few dates that we have been able to establish by corroborative evidence, and though every possible source has been carefully examined no better result has been obtained. Taking the twenty-six reigns before Sona Pála and allowing them the long average of fifteen years to each reign, we cannot place the Bhagwán Pála of the fourth list earlier than the first quarter of the ninth century. But then it can be urged that these lists as they stand do not give the entire succession, but only such members of the dynasty as made themselves remarkable, a not unusual feature in Indian genealogical lists. Al-Birúni, writing in the eleventh century, remarks :—“ Les Indiens attachent peu d'importance á l'ordre des faits ; ils negligent de rédiger la chronique des règnes de leurs rois. Quand ils sont embarrassés, ils parlent au hasard.” The earlier names, too, differ so considerably in these and other lists which have been consulted that no other theory is possible to account for such contradictions as the existence of Kanak Pála at the head of one and Bhagwán Pála at the head of another. By adopting this explanation there is no necessity for placing the reign of Bhagwán Pála in the ninth century. Setting aside Hardwicke's list, an examination of the remainder shows a remarkable agreement in certain noteworthy names. No. 2 has fifth in descent Sigal Pála, who is the Shakti Pála of No.3 and apparently the Suratha Pála of No. 4. The Sáli Pála of No. 2 is the same as the Sáliváhan Pála of No. 3 and No. 4. If we turn to the pedigrees of the Doti and Askot families given hereafter and which are of undoubted local origin, we find a remarkable coincidence amongst the earlier names. The first two of the Doti list are Sáliváhana-deva and Shaktiváhana-deva, and the first on the Askot list is Sáliváhana-deva followed by a Saka-deva as sixth and afterwards by a Vikramáditya and a Bhoja. All that we may suggest regarding the occurrence of the latter names in the lists is that the lists correctly give the sequence of these celebrated names, first a Saka Sáliváhan, then a Vikramáditya and then a Bhoja. These names have apparently been interpolated by the later editors of the lists, the bards of the houses of Garhwál, Doti

and Askot to lend lustre to the ancestry of their patrons, and certainly need not be accepted as members of the family in the regular succession. Even granting that these names are interpolations, there is much deserving of notice in the minor names of the list. The word 'Sigal' in Sigal Pála recalls the name of Sigal, the chief city of the Saka-Skythian district of Sakastene. Sáliváhan is a synonym of the Saka prince who founded the Saka era, called also Sakáditya, SáliPála, Shaktiváhana in these lists. Kank, the eponymous founder in the second list, is none other than Kanishka and is also said to have come from Gujrát, where we have recorded evidence of an Indo-Skythian rule in the Kshatraps and the so-called 'Sáh' dynasty, and where we have a Khōsa race to the present day. In the Suratha Pál of the fourth list we have also a reference to Suráshtra, the old name of the peninsula of Gujrát. Now we cannot imagine that all these coincidences are accidental and would point out that a true historical connection with the old Indo-Skythian dynasty underlies the occurrence of these names in the lists, and we believe that very many of the so-called Rájput houses have a similar origin, notably the hill dynasties and the Baisa in the plains.

Having fairly established a connection between the Indo-Skythians and the local dynasties and bearing in mind that Joshimath in Garhwál was the first acknowledged seat of the Katyúri dynasty of Kumaon, we shall apply this knowledge to the local traditions. Legendary tales in the south of India state that Sáliváhana came from Ayodhya; the Askot chronicles give the same origin, but Mrityunjaya assigns him to Pratishtana on the Godávari. The accord between the Askot and south Indian traditions betrays the influence of the Mysore preachers and teachers whose representatives to the present day hold all the chief offices at Kedárnáth and Badrináth, and it is doubtless to their influence is due the remodelling of the local lists. Locally Sáliváhana was the avenger of the defeat of his tribesman Sakadatta or Sakwanti, the first conqueror of Dehli, and, as he was the greatest name in the national lists, he has been introduced into all the local lists, being in fact suzerain as well. Neither then nor now could any powerful monarch have his seat of government in the Garhwál or Kumaon hills, though the lord paramount of those districts, like the British of to-day, may have

held considerable possessions in the plains. The successors of Śālivāhan, whether of his family or not we have no means for deciding, are reported to have occupied Indraprastha and the hill-country to its north for several generations, for the *Rāja-tarangani* states that Indraprastha after the conquest ceased to be the abode of royalty for nearly eight centuries. "Princes from the Siwālik or northern hills held it during this time and it long continued desolate until the Tuārs." General Cunningham looks on the date 736 A. D. for the rebuilding of Dehli by Anang Pāl Tomār "as being established on grounds that are more than usually firm for Indian history." He also accepts the statement that Indraprastha remained desolate for many centuries after the Saka invasion, and it seems better to retain the indigenous tradition here than to start theories for which we have no foundation in fact. But even for this 'dark age' there are a few statements which throw some light on its history. Firishta¹ tells us that Jaichand left an infant son who succeeded him and who would have ruled in his stead had not his uncle Dihlu deposed him and with the aid of the nobles ascended the throne. "This prince as famous for his justice as for his valour devoted his time to the good of his subjects and built the city of Dehli. After having reigned only four years, Phūr (Porus), a Raja of Kumaon, collecting a considerable force, attacked Dihlu, took him prisoner and sent him in confinement to Rohtas, himself occupying the empire. Raja Phūr pushed on his conquest through Bang as far as the western ocean, and having collected a great army refused to pay tribute to the kings of Persia. The Brahmanical and other historians are agreed that Phūr marched his army to the frontier of India in order to oppose Alexander, on which occasion Phūr lost his life in battle after having reigned seventy-three years." The Greeks found Porus between the Hydaspes and the Akesines and a nephew of Porus in the next *duāb*. We may accept the suggestion that they were both Pauravas or descendants of Puru, for Plutarch makes Gegasius the progenitor of Phūr, and he may be identified with Yayāti.² We have another Porus, however, in the king already referred to, who sent an embassy to Augustus in B.C. 22—20, and this date would agree better with the time given in the local legend of Raja Phūr. We have

¹ Briggs' ed., *India*.

² *Quart. Arch. Rep.*, II., 17.

already suggested on other grounds that this Porus may have been an Indo-Skythian or Parthian, and here he is connected with Kumaon, of which, he may have been suzerain. In another passage¹ Firishta tells us that Rámdeo Rathor between the years 440 and 470 A.D. was opposed in his conquests by the Raja of "Kumaon, who inherited his country and his crown from a long line of ancestors that had ruled upwards of 2,000 years. A sanguinary battle took place which lasted during the whole of one day, from sunrise to sunset, wherein many thousands were slain on both sides, till, at length, the Raja of Kumaon was defeated with the loss of all his elephants and treasure and fled to the hills." The Raja of Kumaon was compelled to give his daughter in marriage to the conqueror. There is nothing to add to this statement but that it corroborates the other tradition that princes from the Siwálik hills held some authority in the upper Duáb between the Saka conquest and the arrival of the Tomars. That Indraprastha was not entirely desolate during the period is shown by the inscription of Raja Dháva on the iron pillar² at Dehli which Prinsep from the form of the letters would assign to the third or fourth century, A. D.

Between the date of the Saka conquest of Indraprastha and the advent of the Chinese traveller Hwen Tshang, Hwen Tshang. all that we can say regarding the history of these hills is that the country appears to have been divided amongst a number of petty princes, of whom sometimes one and sometimes another claimed paramount sway over the remainder. The chief of the Bhilang valley at one time enjoyed the greatest prestige and again a dynasty whose principal seat was in the Alaknanda valley near Joshimath. The Chinese Buddhist pilgrims Fah Hian, Hwui Seng and Sung Yun, whose travels have been translated by Mr. Beal, did not visit Kumaon, and we have to refer to the works of Hwen Tshang for our only information from this source on this period.³ In 634 A. D. Hwen Tshang proceeded from Thanesar to Srughna in the Saháranpur district,⁴ and thence across the Ganges to

¹ Briggs, *l. c.* p. lxxvii; Dowson's Elliot, V., 561.

² J. A. S., Ben.,

1839, p. 629; Thomas' Prinsep, I., 319.

³ For this purpose we have the *Mémoires sur les Contrées Occidentales par Hiouen-Tshang*, translated by M. Stanislas Julien, 2 vols., Paris, 1857; and *Histoire de la vie de Hiouen-Tshang par Hoë-li*, translated by the same, Paris, 1853. Also Cunningham's valuable commentary in his *Ancient Geography of India*, London, 1871.

⁴ *Gas.*, II., 245.

Madáwar in the Bijnor district.¹ He then describes Mayúra or Máya pura close to Hardwár and his journey to *Po-lo-ki-mo-pou-lo* or Brahmapura, which lay 300 li or 50 miles to the north of Madáwar. General Cunrigham writes:—"The northern direction is certainly erroneous, as it would have carried the pilgrim across the Ganges and back again into Srughna. We must therefore read north-east, in which direction lie the districts of Garhwál and Kumaon that once formed the famous kingdom of the *Katyári* dynasty. That this is the country intended by the pilgrim is proved by the fact that it produced copper, which must refer to the well-known copper mines of Dhanpur and Pokhri in Garhwál, which have been worked from an early date." The *Mémoires*² describe the kingdom of Brahmapura as 4,000 li or 666 miles "in circuit surrounded on all sides by mountains. The capital is small, but the inhabitants are numerous and prosperous. The soil is fertile and seed-time and harvest occur at regular seasons. Copper and rock-crystal are produced here. The climate is slightly cold and the people are rough in their manners; a few devote themselves to literature, but the greater number prefer the pursuit of commerce. The inhabitants are naturally uncultivated, and there are followers of both the Buddhist and Brahmanical faiths. There are five monasteries within which reside a few monks and there are some dozen temples of the gods. The followers of the different Brahmanical sects dwell together without distinction. To the north of this kingdom in the midst of the great snowy mountains is the kingdom of *Sou-fa-la-na-kiu-ta-lo* or Suvarnagotra where gold of a superior quality is procured and hence its name. From east to west this kingdom has its greatest extension, but from north to south it is narrow. For many centuries the ruler has been a woman, and hence it is called the 'Kingdom of the queens.' The husband of the reigning sovereign has the title of king, but does not meddle in affairs of state. The men occupy themselves with war and husbandry. The soil is fertile and is favourable to the growth of a poor kind of barley, and the people rear large numbers of sheep and ponies. The climate is icy-cold and the inhabitants are abrupt and turbulent in their manners. This country touches on the east the country of the Tibetans, on the north is the country of Khoten and on the west is *San-po-ho* or Sampaha (?)"

¹ *Gas.*, V.² *I.*, 221 : *Voy. des Fél.*, II., 221., *Fig.*, p. 110.

General Cunningham writes :—“The ancient capital of the **Brahmapura**. Katyúri Rajas was at Lakhanpur or Vairát-pattan on the Rám-ganga river about 80 miles in a direct line from Madáwar. If we might take the measurement from Kot-dwára, at the foot of the hills on the north-eastern frontier of Madáwar, the distance would agree with the 50 miles recorded by Hwen Tshang. It occurs to me, however, as a much more probable explanation of the discrepancy in the recorded bearing and distance that they most probably refer to Govisana, the next place visited by Hwen Tshang, from which Bairát lies exactly 50 miles due north.” General Cunningham also refers to the position of Lakhanpur, in a valley only 3,339 feet above the level of the sea and to the fact that the country around is still fertile and allows of two crops being collected during the year as further corroborating his identification of Lakhanpur with Brahmapura. M. Vivien de St. Martin assigns Brahmapura to Srinagar in Garhwál, which however was of no importance until the present town was built in the early part of the seventeenth century. Others have suggested that the extensive ruins near Barhepura, about twelve miles to the north-east of Najibabad in the Bijnor district, mark the site of Brahmapura; but this conjecture, apparently based on the similarity in sound of the two names, would conflict too much with the precise assignment of Hwen Tshang. The Chinese traveller has shown himself so accurate in the great majority of his statements that it would be contrary to all correct principles of interpretation to reject his distinct assertions before it is shown that they are incapable of any reasonable explanation. Such is very far from being the case in this instance, for in Bárahát in the valley of the Bhágrathi in independent Garhwál we have an ancient and well-known site almost exactly fifty miles due north of Hardwár, and which in climate, products and position both with regard to Madáwar and Suvarnagotra agrees with the description of Hwen Tshang. Bárahát was the seat of an old dynasty and contains numerous remains of temples and other buildings. The inscription on the *trisé* of Aneka Malla written in the twelfth century and which still stands near the temple of Sukha shows that at that time it was a place of some importance.

The remains now existing¹ are chiefly found to the north-west of the river at the foot of a high hill where there is a level piece of ground. Temples, places of pilgrimage, holy pools and sacred streams abound, for this place was on the direct route to Gangotri. In support of this identification we may remark that the distance to Govisana, the next place visited, is measured from Madáwar, to which place Hwen Thsang must have returned in order to reach Govisana from Báráhát, whilst if he proceeded from Lakhanpur his road would have lain across the watershed into the Kosi valley.

It has been suggested, as we have seen, that the ancient name of Lakhanpur was Bairát, but the weight of local testimony connects this name with the ruins near Dhikuli on the Kosi. That Lakhanpur was an ancient residence of the Katyúris cannot be disputed, but the statement that it was their home in the seventh century is open to grave objections. An old verse embodies the popular tradition regarding its origin :—

*'Asan wá há básan wá há sinhasan wá há
Wá há Brihma wá há Lakhanpur.'*

Now the pedigrees of the Doti, Askot and Páli Katyúris all mention the names of Asanti Deva and Básanti Deva, and in the last these names head the list. In the Doti list, six names intervene between Básanti and Gauranga, the second name of the Páli list, and in the Askot list seven names intervene, but whether we are to assign these names to different persons of the same family, as is more probable, or to the same persons, the Páli list in this case retaining only the more remarkable names, there is nothing to show. Assuming that the names belong to different persons, then the Páli family must have branched off immediately after Básanti Deva. In the genealogical table of this branch from Asanti downwards given hereafter we have one Sáranga Deo, tenth in descent, and again one Sáranga Gosáin, fifteenth in descent, who settled at Támádhaun in Chaukot. On the image of the household deity in the family temple at Támádhaun we have

¹ Báráhát suffered much by the great earthquake of 1808, in which all the buildings were materially injured and many were completely buried in the ground. It is said that two to three hundred people perished, and since then few of the houses or temples have been restored : *As. Res.*, XI., 476.

an inscription recording the name Sáranga Deo, and the date 1420 A.D. which if referred to the first Sáranga Deo will place the Asanti Deva in 1290 A.D. by following an average of thirteen years to each reign, and if referred to the second Sáranga Gosáin will place Asanti Deva in 1225 A.D. Taking the Doti list there are eighteen reigns between Asanti Deva and the contemporary of Ratan Chand, Rainka Arjuna Sáhi, who lived in 1462 A.D. If we strike out some twenty years on account of the disturbance in the succession which must have shortened the length of the reigns as well as for the unexpired portion of Arjuna Sáhi's reign, an application of the same calculation gives us 1228 A.D. for Asanti Deva. We may, therefore, fairly conclude that according to local tradition Lakhanpur was founded as late as the beginning of the thirteenth century.

The kingdom of Suvárna-kutula, or Suvárna-gotra as rendered by M. Julien, must have lain to the north from Ganai in the valley of the Gauri (Gori) if we adhere to Lakhanpur as the site to be identified with Brahmapura or across the passes in Tibet if we make Bárabát the Brahmapura of our traveller, and that the latter is the correct interpretation will be shown conclusively hereafter. There is no doubt that the valley of the Gori in Juhár in which Milan is situate has at the present day a considerable population and commands a large trade with Tibet; but in former times the valley of the Alaknanda was the more populous of the two, for Joshimath claims to have been the earliest seat of the Katyúris, an honour to which Juhár cannot aspire. The Juhár tradition, however, is interesting in itself, despite the fabulous details with which it is embellished and doubtless contains a residuum of fact. In any case it is all that the people have to say about themselves, and on this account alone is worth preserving; and as it is supposed to relate to this very period, we may introduce it here and as nearly as possible in the words of the narrator:—

Story of the colonisation of Juhár.

“Jibar or Jíwar is the old name of Juhár, and long before the present race of men came into the world there were two princes (principalities?) in Juhár called Haiduwa and Pingaluwa. The former extended from the snows to Mápá and the latter from Mápá to Laspa. The people of these countries are said to have been covered with hair even to their tongues. There was no pass open at

that time to Hundes. High up on the cliffs near the source of the Gori glacier lived a huge bird (*páru*), whose wings when extended were ab'e to cover the valley at Mápá and who lived on human beings. The bird fed on the hapless inhabitants of Haiduwa and Pingaluwa until but a few families remained. Sákyá Láma lived at this time in a great cave near Laphkkel.¹ Every morning the Láma used to leave his cave and come to Laphkkel, where he used to sit all day at his devotions, flying² back at night to his cave. There was at that time in the service of the Láma a man to whom the Láma wished to do service and he called the man to him and said :—'Go across the snowy mountains to the south and you will find a place called Juhar, where the *páru* has eaten up Haiduwa and Pingaluwa, who lived there. I will give thee a bow and arrow with which thou shalt fight the *páru* and kill it; go, take possession of and colonise Juhar.' The man answered and said :—'Thy servant will obey the voice of his master, but he knoweth not the way and who shall guide him.' The Láma said :—'Fear not, I will provide thee a guide, but take care that thou leave him not. Whatever shape he may assume, follow on and fear not; remember that he is thy guide.' The man and the guide set out together, and after a short time the guide took the form of a dog and the place was called after him Kingri.³ The man followed the dog and it became a stag, hence the name Dol-dúnga; then the stag became a bear and the place was called Topi-dúnga; and again a camel, hence the name Unta-dhúra: then a tiger, hence the name Dúng-udiyár, and finally a hare, which lost itself in Pingaluwa's country at Samgaon.

On looking about him the man saw nothing but the bones of the people who had been eaten by the *páru*, and becoming alarmed fled and took refuge in a house which he found near. Here he found a very old woman covered with hair, and he inquired of her who she was and how the country had become desolate. She told him that she was the last surviving inhabitant of Pingaluwa and Haiduwa's country and added :—'I have remained for the *páru*'s food to-day and you have come to give him his dinner for to-morrow: well done of you.' The man then told her the story of his master the Láma and showed her his bow and arrows and asked her what were the capabilities of the country. She told him that it produced an (*Hordeum caeleste*) and *pháphur* (*Fagopyrum tataricum*), that there were plenty of horses but no salt, and that they could not get to Hundes, where salt was to be had for the asking for it. Whilst thus engaged in conversation he suddenly heard a great whirr of wings and the bird appeared and seized the old woman and cat her up. Nothing daunted the man seized his bow and shot his arrows until he killed the bird. Then he lighted a fire and said to himself :—'I shall go back to the Láma and get some salt. I am pleased with this place, and this shall be a sign to me that if the valley is intended for me this fire shall not go out until I return, and if the valley is not to be mine then the fire shall die out.' So saying he returned to the Láma by the way which he had come and told the Láma all that had befallen him. He found his old guide at Laphkkel in his

¹ At the foot of the Balchha-dhúra pass. ² The power of flying was one of the six essential attributes of the sacred Lámás. ³ A peak to the east of the Chidamu or Kyungar encamping-ground is still called Kingribingri (*king*=a dog). Dol-dúnga at the confluence of the Dol and Lanka (*Dol*=*jurás*=*Russ arustoidis*). Topi-dúnga on the left bank of the Lanka (*topi*=a bear). Unta or Unta-dhúra is the pass above Milam. Dúnga is at the foot of the pass and Samgaon is Shamgaon on the way to Milam.

proper shape and then asked the Lâma for salt. 'The Lâma said:—'There is plenty of salt in Hundes, but I will produce it for you here.' The Lâma then took salt and sowed it over the land like grain and promised that the supply should be sufficient for the entire wants of the new settlement. Having thus spoken the Lâma flew away to his cave and was never seen again, and to the present day the herbage here is so saturated with salt that there is sufficient for the Bhotiya flocks. The people still say that this salt is one of Sâkyâ's gifts, and when Buddhist priests visit the valley they ask for alms in the name of Sâkyâ who gave the people salt.

When Sâkyâ Lâma flew away his servant returned to Juhâr and there he found his fire still alight and accepting the omen resolved to remain in the valley. He collected a number of people called Sokas and established them near Milam and built a temple in honour of Sâkyâ. In the time of Sonpati Soka, who lived at Madkot, the route to Hundes by the Madkuwa river which was used by the people of Athâsi, was opened and much gold was acquired by him. This route has since fallen into disuse owing to the accumulation of snow and the debris of avalanches. These events occurred before the time of the Katyûri Râjas and in course of time the Sokas also disappeared. They were followed by the ancestors of the present Milamwâla, who came from Tibet into the valley in this manner. They say that they are of Rajpût origin and that their fathers served one of the Garhwâl Râjas who gave them Jola in Badhân in Jyôtr, and hence they were called Râwats. One of these went through Malâri of Nîti into Hundes and entered the service of the Surajbansi Râja of Hundes. Here he remained for a time, and being fond of the chase wandered over the hills towards the south in pursuit of game. One day he followed a wild cow from early morn to evening and saw it disappear at the confluence of the Gunka and the Gori, and accepting this as a good omen the Râwat much fatigued with the chase called the place Mi-dûnga¹ and built there the village of Milam, the inhabitants of which are known to the present day as Râwats or Sokas.

Such is the only tradition that exists regarding the early settlements in Juhâr. As to the Nîti valley, the tradition is that the branch of the Katyûri dynasty who subsequently occupied the Katyûr valley was originally established in Jyotirdhâm² or Joshimath on the Dhauli, the river of Nîti. There are no indications or traditions of any Amazonian kingdom in the valley, and we must search for it across the passes in Tibet.

The Chinese name of the Amazonian kingdom was Kinchi, and

The Amazonian king-
dom. M. Julien makes Sampaha which lay to the west

of it the same as *Mo-lo-so* or *Malasa*, which was some 2,000 *li* or 333 miles to the north of *Lo-hou-lo*, the modern Labûl. Hwen Thsang describes the journey from Labûl to Mulasa as difficult and attended by an icy piercing wind so often described by

¹ From *wi*, man and *dûnga*, encamping-ground or resting-place.
place where the great *Jyotir ling*, emblem of Mahâdeo, was established.

² The

travellers in the Himálaya and snow-storms. This clearly brings us across the snowy range to the trans-Himálayan valley of the Satlaj. In D'Anville's reproduction of the Jesuits' map of Tibet this tract is marked as Sanke Somtou and lies to the west of Tchoumourti or Chamurti, a district and town of the modern gNári. The country lying between the Ganges and the Matchou or Karnáli is called Nacra Somtou in the same map. gNári is celebrated for its mines of gold and is bounded on the north by Khoten and on the east by Tibet proper. The Vishnu-Purána¹ in its prophetic chapters declares that the Kanakas or Kánas will possess the Amazon country (*Strirájya*) and that called Múshika. The Váyu Purána reads Bhokshyaka or Bhokhyaka for Múshika and others read Búshika. Wilson writes:—" *Strirájya* is usually placed in Bhot. It may, perhaps, here designate Malabar, where polyandry equally prevails. Múshika or the country of thieves was the pirate coast of the Konkan." In the *Rája Torangani*, Lalitáditya (730 A.D.) is said² to have erected a statue of Nrihari in the Stri Rájya, showing that it was near Kashmír; but in the Chinese annals³ we have a record which corroborates the statement of Hwen Tshang and proves that the Amazonian kingdom lay in Tibet and was a reality. From it we learn that there was a tribe in Eastern Tibet known as the Nu-wang from the fact of their being ruled by a woman. In the Tung history they are called Tung-Nu or Eastern-Nu, to distinguish them from a tribe possessing similar institutions to the west. They are first mentioned in the Northern history, and in the Sui history an account is given of an embassy from the Eastern-Nu in 586 A.D., in which it is stated that:—

"The people in each successive reign make a woman their prince. The surname of the sovereign is Supí. They build cities in the mountains with houses of many stories, the sovereign's house having nine, in which there are several hundreds of female attendants and a court is held every five days. The men, having nothing to do with the government only fight and cultivate the land. Both men and women paint their faces of many colours. They live principally by hunting and the weather is very cold. The natural products are copper and gold ore, cinabar,

¹ Wilson, IX., 222.

² As. Res. XV., 49. The highlands of Tibet have always been notorious for the wandering bands of thieves that infest the n. In the Mahábhárata the Kanakas and Kánas are mentioned as bringing presents to the Pándavas of *paiplika* gold which was so called because it was collected by ants, *paiplika*, in allusion to the burrows of the miners in the Tibetan gold-fields.

³ Dr. Bushel, J. R. A. S., XL., 531. It is possible that in Suvarna-gotra we have the origin of the Suvarna-bhúmi and Hiranya-máya of the Puránas. Most of the gold imported from Tibet comes by this route to the present day.

musk, yaks and two breeds of horses, in addition to salt in abundance, which they carry to India and gain much by the traffic. They have had frequent wars with Tanghsiang and with India. When the queen dies they collect a large sum of gold money and select from her family two clever women, of which one is made the queen and the other the lesser sovereign. * * The title of the queen is Pinchia and of the female ministers of state is Kaopuli. * * The sons take the surname of the mother. The written characters are the same as those of India and the eleventh Chinese month is the beginning of their year. * * At the burial of their sovereign several tens of the great ministers and relatives are buried at the same time. In the period Wu-te (618-626 A.D.) the queen named Tang pang first sent envoys with tribute. Since the year 742 A.D. they elected a man as ruler and a few years afterwards the state was absorbed by Lhása."

There is therefore no need to doubt the statements of Hwen Thsang or the traditions of the Indians regarding this Amazonian kingdom, since it was not until some time after the visit of Hwen Thsang to Brahmapura that the western Chiang submitted to Lhása, as will be seen from the following short sketch of Tibetan history at this time.

The country to which the name Tibet is now applied appears Tibet from Chinese sources. in the Chinese annals of the Yang dynasty (from 618 A.D.) as T'ufan, which should be read T'u-po: hence in an inscription at Lhása dated in 822 A.D. we find the native Tibetan name for the country 'Bod' rendered in Chinese by 'Fan.'¹ In the records of the Táatar Liaos who reigned in northern China in the latter part of the eleventh century Tibet is called T'u-pot'é, in which the latter syllable represents Bod. During the Ming dynasty the name was changed to Wussütsang from the two principal provinces dbus and gtsang, hence the modern name Weitsang. The word *hsi* or 'western' is also applied to the country: hence *hsi-tsang* and *hsi-fan*, and the people are called Tupote and Tangkute. The European name is derived from the Arabic through the Mongol in the form Tibet which occurs in the travels of the merchant Sulaiman as early as 851 A.D. During the Han dynasty Tibet was occupied by a number of tribes called Kluang or Chiang,² and towards the close of the fourth century a number of these were united together under Huti-pusuyeh,³ chief of the Fa-chiang, and

¹ Bushell, J. R. A. S., Xii., 435: he shows, as Bémusat had remarked, that the character for 'fan' is a phonetic which has the two sounds 'fan' and 'pa.'
² The name Chiang is composed of the characters for 'man' and 'sheep,' indicating their pastoral character.
³ His descendants were called T'u-fan, their surname being Pusuyeh.

formed the nucleus of the kingdom of Tibet. Under the Tang dynasty who ruled until the end of the ninth century the new kingdom was called Tu-fan, pronounced Tu-po and equivalent to Tu-bod. The first direct communication of the Tibetans with China was in 634 A.D., when Chitsunglungstan, the Tsanpu of Lhása, sent an embassy to China and in 641 A.D. received a daughter of the Emperor in marriage and introduced Chinese customs at his court. On the death of Siláditya king of Magadha one of his ministers usurped the throne and plundered the Chinese envoy Wang Yuantse, who was returning with presents for his master. Wang applied for assistance to the Tibetans, who led 1,200 chosen warriors and 7,000 Nepálese horsemen to India and captured the offender and brought him prisoner to the imperial capital in 648 A.D. Lungstan died in 650 A.D. and was succeeded by his grandson, under whom the Tibetan kingdom was firmly established. The Chiang tribes who had hitherto stood aloof were glad to connect themselves with the rising power at Lhása and the hostile Tukung¹ were driven out of the country (666 A.D.). The Tibetans now more than held their own against China and defeated successive armies sent against them. On the east their authority extended to Ssuchuen; on the west to Kashgár; on the north to the Tuchueh or Turkish country, and on the south to Polomen or Magadha, apparently used as a generic name for India. All these successes were gained by a family of hereditary ministers or mayors of the palace, the last of whom was executed by the Tsanpu Chinhsilung in 699 A.D. Chinhsilung himself died during an expedition against Nepal and India² in 703 A.D.

Csoma deKörösi gives from Tibetan sources a list of kings of Tibet commencing with the Tsanpu Nyá-khrí, an Indian refugee prince of the family

of the Licchhavis of Vaisáli³ and the reputed founder or at least the great restorer of the Pon religion. The Licchhavis were determined opponents of Sákya and were Surajbansi Kshatriyas by birth, and thus the Jubár tradition of a Rajpút race in Tibet is confirmed. The emigration to Tibet took place according to M. Csoma in B.C. 250, and this dynasty of Indian origin ruled there.

¹ An eastern Tatar race settled near Kokonor (*l. c.*, p. 527.) ² The same record gives an interesting account of the wars between China and Tibet up to 840 A.D., but we have nothing to do with this here. ³ Near Patna, *Cum.* Arch. Rep. I., 88; Ladák, 384; Lassen, III., 774. In the temple of Jágewar, beyond Aluora there is a brass image of a Pon kája.

Srong b Tsan sGampo, who ascended¹ the throne in 629-30 A.D., is represented as a great conqueror, a religious reformer and a pioneer of civilisation in Tibet, and can be no other than the Chitsunglungstan of the Chinese records, who removed the seat of government from the Yarlung valley to Lhása and married a daughter of the Emperor of China. The following list of kings occur in the Chinese annals :—

Hutipusnyeh, chief of the Fa-chiang, to whose family belonged Fanni or Supuyeh who was a boy in 414 A.D., and succeeded in establishing the nucleus of a state in 425 A.D. After him reigned a sovereign named H-iahsitngmo. Tungmo begat Totutu : Tutu begat Chielishihjo ; Chiehli begat Pumungjo : Pumung begat Chusujo : Chusu begat Luntsansu : Luntsan begat Chitsunglungtsan, also called Chisamung and styled Fuyehshih. He was a minor when he ascended the throne in 630 and died 650 A.D. Chitsung was succeeded by his grandson Chilipapu, a minor who deceased in 679 A.D., and was followed by his son only eight years of age, Chinuh Ilung, who died in 703 A.D. The next Tsanpu was Chilisungliesitsan Chilisotsan, aged seven, who died in 755 A.D., and was succeeded by his son Sohsilungliehtsan, who took Ch'angan, the then capital of China, in 763 A.D. We find Chilitan surnamed Huluti reigning in 780 and succeeded by his eldest son Tsuchihchien in 797. He died in 798 and was succeeded by his unnamed brother who died in 804 and by another who died in 816, when Kolikotsu succeeded with the title Yitai. The last named died in 838 and was succeeded by his brother Tamo, who died in 842, when the infant Chilibu of the house of Lin and nephew of the consort of Tamo was set up by one party and civil war ensued. Shangkunje declared himself Tsanpu in 849 and perished in battle with the Uigurs in 866 A.D. These names may be compared with those given² from Tibetan sources by M. Csoma, M. Klaproth and Sarat Chander Das.

The kingdom of *Kiu-pi-choung-na*, which M. Julien renders by Govisana, lay 400 li or 67 miles to the south-east of Madáwar.³ It was about 2,000

¹ Lassen *l.c.* : a Licchhavi prince ruled at this time in Nepal (Mém. I., 447); the early date given to the first Licchhavi prince between whom and Srongtsan Gampo there were only thirty-one reigns (879+12=24) is very doubtful.

² Tibetan Grammar, p. 180 : Thomas's Princep, II., 288-89 : Klaproth's 'Tableaux historiques,' p. 185 : Alphabetum Tibetanum of Georgius, Rome, 1762.

³ Voy des Pél., II., 238 : Mém. I., 288 : Cunn. Anc. Geogh., 357.

li or 334 miles in circuit and the capital was about 15 li or 2½ miles in circuit. The city was built on an elevated site difficult of access and was surrounded by groves, tanks and fish-ponds. There was a numerous population of simple and rustic habits. The soil was fertile and resembled that of Madáwar. Many devoted themselves to literature and the practice of religious virtues, but many were still followers of the Brahmanical faith. There were two monasteries occupied by one hundred monks who studied the Hinayána-sutras and one temple of the gods. The larger of the two monasteries was close to the city and possessed a *stupa* about two hundred feet high built by Asoka to mark the place where for the space of a month Buddha expounded the law. Close by was a place where the four past Buddhas had been accustomed to take exercise, and near it were two *stupas* erected to cover the nails and hair of Buddha. Four hundred li or 67 miles to the south-east lay the kingdom of *O-hi-tchi-ta-lo* or Ahichhatra. General Cunningham identifies Govisana with the old fort near the village of Ujain one mile to the east of Káshipur in the Taráí district. The true bearing of Káshipur from Madáwar is east south-east, and by the road he travelled General Cunningham makes the distance 66 miles. He also states the position of Káshipur will agree with its bearing from Ahichhatra, the next place visited by Hwen Tshang and of which the site is well established. Káshipur itself was founded by Káshináth Adhikári as late as 1718 A.D., and the old fort is called after the name of the nearest village. The circuit of the fort and the ruins in its immediate neighbourhood is very nearly the same as that given by Hwen Tshang, and there are numerous groves, tanks and fish-ponds around the place. One of these known as the Drona-ságar is still a favourite place of resort for pilgrims going to visit the sacred shrines in the snowy range. We would, however, identify Govisana with the ruins near Dhikuli some 22 miles to the north of Káshipur on the river Rám-ganga, and which subsequently formed the site of the winter residence of both Katyúris and Chands. The elevated position of this site and the presence of remains sufficient to account for the existence of a *stupa* and other buildings as well as its identification in popular tradition with the ancient city of Vairát-pátan lend great weight to this view, but until these ruins are more closely

examined this point cannot be decided, and in the meantime General Cunningham's identification may be allowed to stand. We have now to leave the pleasant pages of Hwen Thsang and for many centuries be content to grope our way amidst the traditions half fact and half fable that have survived.

Buddhism, as we have seen, was fairly established in Kumaon in the seventh century, but between the date of Hwen Thsang's visit towards the middle of the seventh century and the period in which Sankara Acharya flourished such changes occurred that after his time hardly a single Buddhist temple remained in the Kumaon Himalaya. The local tradition is distinct on this point, and it follows that if the institutions established by Sankara survive to the present day, the Buddhists must have succumbed either before his time or through his influence. In another chapter we shall give some account of his life and writings, and here we shall review the evidence as to the age in which he lived, which is so intimately connected with that strange upheaval of the old religion and the dispersion of its opponents. Wilson, in the preface to the first edition of his Sanskrit Dictionary, notices many of the statements made regarding the age of Sankara.

Sankara Acharya. From him¹ we learn that the Kadali Brahmans who follow the teaching of Sankara declare that he lived some two thousand years ago; others place him about the beginning of the Christian era, or in the third or fourth century after Christ, or as contemporary with Tiru Vikramadeva, sovereign of Skandapura in the Dakhin in 178 A.D. The people of the Sringeri or Sringeri *math* on the edge of the western ghats in the Mysore territory, of which Sankara himself was the second mahant, assign him an antiquity of 1,600 years. Wilson gives a list of the mahants of this institution showing twenty-seven descents from Sankara, and allowing a quarter of a century to each mahant, a period of 675 years should elapse from the founder, but as Wilson could not determine the date when the list closed he did not attach any importance to the result. Dr. Burnell in writing of the time of Hwen Thsang (640 A.D.) incidentally states, 'as the Brahmanical system of Sankara sprung up in the next half century.'

¹ For details and references, see Wilson's Works, I., 200; V., 188; XII., 5.

thus making the great reformer live in the end of the seventh century. Williams in his dictionary gives the dates 650-740 A.D. The Vaishnava Brahmans in Malabar place Sankara in the tenth century. Dr. Taylor in his translation of the *Prabodha Chandrodaya* thinks that if we place him about 900 A.D., we shall not be far from the truth, and both Colebrooke¹ and Ram Mohun Roy refer him to 1000 A.D. The latter writer, who was a diligent student of Sankara's works, elsewhere infers that "from a calculation of the spiritual generations of the followers of Sankara Swami from his time up to this date, he seems to have lived between the seventh and eighth centuries of the Christian era." The Kerala *Utpatti*,² devoted to the history of Malabar, makes Sankara contemporary with Cheruman Perumal, a prince who granted many privileges to Christians and founded Calicut. According to Scaliger, Calicut was founded in 907 or following another authority in 825 A.D. Wilson in one place assigns Sankara to the end of the eighth and beginning of the ninth century A.D., and in another place writes that subsequent inquiry has failed to add any reasons to those assigned by him for his proposed inference, but it has offered nothing to invalidate or weaken the conclusion arrived at. Weber³ places Sankara "in about the eighth century."

In the local history of Nepal⁴ we have an interesting record of the traditions that have survived regarding Sankara Acharya's visit to that country which may throw some light on the local traditions respecting him in Kumaon. On the death of Brikhadewa Barma, his brother Balarachana Deva was regent of Nepal, and at this time Sankara Acharya visited the valley in pursuit of the Buddhists. Here he found that all the four castes were of that religion: some lived in Viharas as Bhikshus; some were Sravakas, also living in Viharas; some were Tantrikas called Acharyas and some were Grihasthas, also following the Buddhist religion. There were no learned men and when some of the Grihastha Acharyas endeavoured to meet him in argument, they were soon defeated.

¹ In the preface to the *Dáyabhāga*. ² *As. Res.* V., 5. ³ *Hist. Ind. Lit.*, p. 51, which presumably gives the latest results on this subject. Weber writes:—"Sankara's date has not, unfortunately, been more accurately determined as yet. He passes at the same time for a zealous adversary of the "Uddhists, and is therefore called a Saiva or follower of Siva. In his works, however, he appears as a worshipper of Yásudeva, whom he puts forward as the real incarnation or representative of Brahma."⁴ Wright's *Nepal*, 112.

“Some of them fled and some were put to death. Some who would not allow that they were defeated were also killed. Wherefore many confessed that they were vanquished, though in reality not convinced that they were in error. These he ordered to do *hinsa* (i.e., to sacrifice animals), which is in direct opposition to the tenets of the Buddhist religion. He likewise compelled the Bhikshunis or nuns to marry, and forced the Grihasthas to shave the knot of hair on the crown of their heads when performing the *chúra-karma*, or first shaving of the head. Thus he placed the Banaprasthas (ascetics) and Grihasthas on the same footing. He also put a stop to many of their religious ceremonies and cut their Brahmanical threads. There were at that time 84,000 works on the Buddhist religion, which he searched for and destroyed. He then went to the Manichúra mountain, to destroy the Buddhists there. Six times the goddess Mani Jogini raised storms and prevented his ascending the mountains, but the seventh time he succeeded. He then decided that Mahákáta, who was a Buddha and abhorred *hinsa*, should have animals sacrificed to him. Mani Jogini or Ugra-táriní was named by him Bajra Jogini. Having thus overcome the Buddhists, he introduced the Saiva religion in the place of that of Buddha * * Sankara thus destroyed the Buddhist religion and allowed none to follow it: but he was obliged to leave Buddhamárgis in some places as priest of temples, when he found that no other persons would be able to propitiate the gods placed in them by great Bauddhamárgis.”

When the children of some of these Bauddhamárgi priests were desirous of performing the *chúra-karma*, or ceremony of shaving the head, they are reported to have said:—“Sankara has destroyed the Bauddhamárgis. He has turned out the Bauddhamárgi-grihastha Brahmans who hitherto worshipped Pasupati and has appointed in their stead Brahmans from the Dakshin and those Bauddhamárgis who have accepted Sankara’s doctrines have been made priests of Guljishware and other places.” Our fathers obeyed not, but worshipped the old deities as before. Are we to abandon the gods of our forefathers and follow Sankara’s direction to perform the *chúra-karma*, without which we cannot undertake the duties of an Achárya? In this dilemma, they consulted the Bhikshus who had married the Bhikshunis at Sankara’s command, and were told that the people of that place remained silent through fear of Sankara, but had kept the truth in their hearts. They had, however, been visited with goitre as a punishment for their faintheartedness, and it was the duty of all who could do so to leave at once a place where the worship of their old deities was not permitted them. Accordingly they emigrated to Pingala Bahál and, appointing Bhikshus to follow the Tantra Shástras, made a rule that each in turn should take charge of the image of Sákyá (Buddha).

The researches of Wilson and Hodgson show us that this is a fair representation of what actually took place in Nepál, and there is no reason to believe that the expulsion of the Buddhist priests from Kumaon took place either at a different time or at other hands. The universal tradition is that Sankara came into Kumaon and drove out the Buddhists and unbelievers and restored the ancient religion. Kumárika Bhatta, the predecessor of Sankara, was equally with him a rigid maintainer of the orthodox faith and is credited with being the principal leader in the exterminating crusade waged against the Buddhists and heretics of all classes. Sankara was ably aided by Udáyana Achárya and the Saiva and Vaishnava princes, who from political motives were only too glad to assist in and profit by the destruction of those who had usurped the fairest provinces of Hindustán. As we shall see hereafter, the worship of Vásudeva or Básdeo as the representative on earth of the great god was re-established by Sankara. In Kumaon, as in Nepál, Sankara displaced the Baudhamárgi priests of Pasupati at Kedár and of Náráyana at Badrináth and in their place introduced priests from the Dakhín, whose successors still manage the affairs of those temples. To keep up the prestige of his new arrangements, Sankara through his followers preached everywhere the efficacy of pilgrimage to the holy shrines and doubtless the facility of communication and the influx of orthodox pilgrims to Badari and Kedár prevented¹ a relapse into Buddhism in Kumaon, whilst the absence of communication with the plains led to a revival of the friendly feeling between the followers of the two religions in Nepál which has continued to exist to the present day. So far therefore as we can see, the dispersion or absorption of the Buddhists in Kumaon was due to the efforts of Sankara towards the end of the seventh or beginning of the eighth century of our era, and that this must have been accompanied by considerable political disturbances may be inferred from the history of all other similar revolutions.

The Katyúris, regarding whom we have already had something to record, were, according to local tradition, the ruling family in

¹ The belt of exclusive Brahmanism lies between the Káíl on the east (or perhaps the Karnáíl) and the Tons on the west, which contain the great pilgrim routes. Orthodoxy is here rampant and very profitable.

Kumaon both before and after the great religious cataclysm of the eighth century. After the time of Sankara Katyúria. we find them in the valley of the Alaknanda at Joshimath in Garhwál. There is nothing to show how they settled there, but from what we have recorded we may consider them as one of the many petty dynasties at this time ruling in Garhwál. The Katyúris of the Katyúr valley traced back their origin to Joshimath and every existing branch of the family traces back its origin to Katyúr. The ancient temple of Bádeo at Joshimath is said to be the oldest of all and also to bear the name of the first of the Katyúri kings.¹ If in connection with the fact that Vásudeva was the name given by Sankara to the form of the Supreme being whose worship he principally inculcated we remember that the Katyúris in the few inscriptions that have come down to us are recorded as devoted followers of the Brahmanical religion, we may safely assume that they belonged to the ruling power that came forward and aided Sankara in his reforms, and therefore enjoyed the political advantages which accrued from the suppression of the monasteries and the spoiling of the Bauddha families. In fact, the earliest traditions record that the possessions of these Joshimath Katyúris extended from the Satlaj as far as the Gandaki and from the snow to the plains including the whole of Rohilkhand.

The cause of the emigration from Joshimath to the Katyúr valley is told in the following legend:—

“A descendant of Bádeo went to hunt in the jungles one day, and during his absence Vishnu, in his man-lion incarnation as Nar-Sinha, taking the shape of a man, visited the palace and asked the wife of the absent prince for food. The Ráni gave the man enough to eat and after eating he lay down on the Raja's bed. When the Raja returned from the chase and found a stranger asleep on his bed, he drew his sword and struck him on the arm, but lo! instead of blood, milk flowed forth from the wound. The Raja was terrified at the omen and called his Ráni to counsel and she said:—“No doubt this is a *debtis*: why did you strike him?” The Raja then addressed Nar-Sinha and asked that his crime might be punished. On this the deity disclosed himself and said:—“I am Nar-Sinha. I was pleased with thee and therefore came to thy darbár: now thy fault shall be punished in this wise: thou shalt leave this pleasant place Jyotirdhám and go into Katyúr and there establish thy home. Remember that this wound

¹ In this connection we may recall to mind the Devanstra Vásudeva, the third of the Tarushka kings of Kashmir. The Katyúri Raja was styled *Sát Bádeo Giriraj Chakra Chakrawati*.

which thou hast given me shall also be seen on the image in my temple, and when that image shall fall to pieces and the haud shall no more remain, thy house shall fall to ruin and thy dynasty shall disappear from amongst the princes of the world."

So saying Nar-Sinha departed and was no more seen by the Raja. Another story makes Sankarácharya the unwelcome visitor to the Ráni whilst her husband Básdeo was engaged in his ablutions at Vishnuprayág. Stripped of its embellishments the story would seem to show that the descendants of Básdeo were obliged to abandon Joshimath owing to religious quarrels. The preferential worship of Siva and Vishnu began to be taught even by the immediate followers of Sankara and soon led to dissensions, the history of which will be related elsewhere.

The immediate result of the interview with Nar-Sinha was that the Raja set out for the valley of the Gomati¹ and near the present village of Bajnáth founded a city which he called after the war-like son of Mahádeo by the name Kárttikeyapura. He found there the ruins of an old town named Karbápur and used the materials for rebuilding the temple to Kárttikeya and also for constructing wells, reservoirs and bazars. The question whether the dynasty gave its name to the valley which ever afterwards was known as Katyúr or the valley gave its name to the family who ruled in it is of some importance in our researches. The name Katyúr may be derived from that of the capital city, the Páli form of which would be Kattikayapura, easily shortened into Kattikyúra and Katyúra, but it appears equally probable that the resemblance between the name Katyúra and that of their capital city is purely accidental. The dynasty must have had a tribal name long before Kárttikeyapura was occupied, and it would be contrary to all precedent that this should be exchanged for a corrupted form of the name of their new capital city. It is therefore much more likely that the dynasty gave their tribal name to the valley and that this name was Kator or Katyúr. Some have endeavoured to connect this name with the Surajbansi tribe of Katchiriya Rajpúts, who gave their name to the tract subsequently known as Rohilkhand, but this suggestion is opposed to all that we know regarding that clan of Rajpúts and is entirely unsupported

¹ Join the Sarju at Bágeswar.

by any received tradition either in the hills or in the plains. Most probably as we have seen, we have to look in a very different direction for the origin of the name Katyúri and that it is derived from the royal race of Katúre, and in this connection it may be remarked that Kárttikeya was a favourite deity of the Turushka princes of Kashmír and occurs in the form Skanda on their coins.

The only actual records of the Katyúris that have come down to us consist of six inscriptions, five of which are grants engraved on copper and one is a similar record inscribed on stone. The last belongs to the

Inscriptions. temple of Siva as Vyaghreswar (the tiger-lord) or Vákeswar (the lord of eloquence) situated at the junction of the Gomati and Sarju in Patti Katyúr of Kumaon. The slab on which the writing is inscribed is, unfortunately, much injured, especially in the right lower corner, where the date has been obliterated. It records the grant by Sri Bhúdeva Deva of a village and land to the temple of Vyaghreswar and gives the names of seven Rajas, the ancestors of the donor,¹ as follows:—

- | | |
|-------------------------|----------------------|
| 1. Basantana Deva | 5. Nimbarata Deva. |
| 2. Kharppara Deva. | 6. Ishtarana Deva. |
| 3. Kalyánarája Deva. | 7. Lalit-swara Deva. |
| 4. Tribhúvanarája Deva. | 8. Bhúdeva Deva. |

The following is a tentative translation² of this inscription made from copies furnished by Mr. Traill:—

Bágeswar Inscription.

Blessing and salutation. On the southern part of this beautiful temple, the royal lineage is inscribed by learned persons.

Bow down at the foot of Paradeva placed at the gate called Nínánanúti at Pavupidadata in the village of Námya which destroys the nets of animals. There was a raja named Masantana Deva who was a king of kings most venerable and wealthy. In his wife, the queen named Sajyanaránevha, who knew no one but her husband, was conceived a raja who was also a king of kings, the richest, the most respected of his time, worthy to be trusted and prosperous; who set apart successively provisions for the worship of Parameswara and caused several public roads to be constructed leading to Jayasábhákti and who provided fragrant substances, flowers, incense, lamps and ointments for Baghreswara

¹ J. A. S. Ben., VII., 1,056. The names in the text differ from those given in the Journal of the Asiatic Society, but as they were taken on the spot by Rudradatta Pant, a competent Sanskrit scholar, they are retained here in preference to those taken from the copy.

² By Saroda Prasáda Chakravartí.

Deva in Ambalpalika and who was the protector in battle; who, moreover, gave fragrant substances, flowers, &c., and the village named Sarneswara Grama which his father had granted to the Vaishnavas for worship of the abovementioned god. Who erected buildings on the side of the public roads. As long as the sun and moon exists so long shall there his virtuous deeds exist.

His son was Kharpara Deva, the king of kings, respectable and wealthy; in his wife, * * * who was much devoted to him, was born Adhidhaja, who was most wealthy, respectable and learned. Of his queen Ladhha Devi, who loved her husband dearly, was born Tribhuvana Raja Deva, who was active, rich, honorable and intelligent. He gave two *dronas* of a fruitful field named Naya in the village Jayakulabhutika to the above god and also ordered the fragrant substances, &c., produced in it, to be employed in the worship of the same god. It is also worthy to be known that he was the intimate friend of the son of the Kirata who gave two and a half *dronas* land to the above-mentioned god and to the god Gambiyapinda. Another son of Adhidhaja gave one *drona* of land to the god Baharake and moreover caused a grant of two bighas of land to be engraved on a stone in the Sambat year 11. He also gave one *drona* of land to the god Baghreswara and fourteen parcels of land to Chandalnunda Debi and he established a *prapa* (*baoli* or well) in honour of the former. All these tracts of land have been consecrated to the god Baghreswara for his worship.

There was another Raja named Nunvarata who was possessed of compassion, sincerity, truth, strength, good dispositions, heroism, magnanimity, intellect, politeness and good character, of a charming person, adorned with morals and with several eminent qualities, active in conquering by the force of his bow held in hand, and born for worshipping the lily feet of the owner of Nandana and Amaravati, who acquired fame by the force of his arms through the favour of Durjadhni, who wears matted hairs on his head tied up with the pearls of his crown resembling a crescent and illuminated with the purest water of Ganga, which confers ten million beauties which head of matted hair robs other radiant substances of their lustre by its many large, clear and beautiful jewels and bright *kesara* flowers on which play the black snakes. He subdued all his enemies and his colour was like gold, his fair body was always bent down with respect for the worship of all gods, *Daityas*, men and learned persons, and his fame is sung everywhere as derived from the performance of *Yagyas*.

His son Istovana Deva born from the chief of his queens, Dasu Devi, who loved him dearly, was a king of kings, rich, respectable and learned. His son Lalita Sura Deva was born of his wife Dhara Devi, who was much devoted to him, who was also a king of kings, wealthy, respected, intelligent and in all respects a hero. His son Bhadeva Deva was born of his wife Laya Devi, who loved much her husband. He also was king of kings, a zealous worshipper of Brahma, an enemy of Buddha Sravana, a lover of truth, rich, beautiful, learned, continually engaged in religious observances and a person near whom Kali could not approach: whose eyes were beautiful as blue lilies and quirk, the palm of whose hands resembled young twigs whose ears were frequently troubled by the sound of jewels of the crowns of Rajas who bowed before him and whose great weapon destroyed darkness, whose feet resembled the colour of gold, who granted pensions to his favourite attendants. He

Four of the copper-plate grants are preserved in the temple of Pandukeswar near Badrináth, and of these two contain the fifth, sixth and seventh names of the Bágeswar inscription. The first of these two records the grant in the 21st year of the *Vijaya-rájya*, or 'realm of victory,' of certain villages in Gorunna Sári to Náráyana Bhattáraka by Lalitesvara Deva¹ at the instigation of his queen Sáma Devi. The civil minister was Vijaka and the minister of war was Aryyata and the writer Ganga Bhadra. The second of the two plates is dated in the 22nd year of the same era and records a similar grant to the same personage, Náráyana Bhattáraka, 'who is revered by the scholarly men of Garuda-asrama.' The officials subscribing the grant are the same and the place intended is the village of Tapuban on the left bank of the Alaknanda above Joshimath, where there are still the remains of numerous temples and one of the places of pilgrimage connected with Badrináth. There are but three names mentioned in these two plates and these are :—

Nimbarata and his queen Náthú Devi.

Ishtagana Deva and his queen Desa (Vega) Devi.

Lalitasára Deva and his queen Sáma Devi.

Both these grants are dated from Kárttikeyapura.

Two other plates from Pandukeswar introduce us to a separate series of names intimately connected with the last which are further confirmed by a similar grant made by the same princes to the temple of Báleswar in eastern Kumaon. The first of the plates of this new list is dated from Kárttikeyapura in the 5th year of the *pravaraddhamána Vijaya-rájya*, Samvat 5. It is addressed to the officials of the Esála district by Desata Deva and records the grant to Vijayesvara of the village of Yamuna in that district. This plate gives the names of Salonáditya and his queen Sinhavali² Devi followed by their son Ichchata Deva and his queen Sindhu Devi, whose son was Desata Deva. The record was subscribed by the chief civil officer, Bhatta Hari Sarmma; by the chief military officer, Nandáditya, and by the scribe Bhadra, and is now deposited in the Báleswar temple. The next plate is from Pandukeswar and is

¹ The reading may be Lalitasára Deva.

² This name may be read Sinhavall.

also dated from Kárttikeyapura in the 25th year of a similar era. It is addressed to the officials in the district of Tanganapura and records the grant to the temple of Badari by Padmata Deva, son of the Desata Deva of the Báleswar plate of four villages situated in Drumati in the district of Tanganapura. The names of the three princes of the previous plate are given with the addition of the name Padmalla Devi as the name of the queen of Desata Deva. The officials concerned were in the civil department, Bhatta Dhana ; in the military department, Náráyana Datta ; and the writer was Nanda Bhadra. The plate is now deposited in the temple of Paudukeswar near Badrináth.

The third record of this dynasty is dated from the city of Subhikshapura in the fourth year of the *Vijaya-rájya*. The donor in this case is Subhiksharája Deva, son of Padmata Deva, who addresses the officials in the districts of Tanganapura and Antaránga to note the grant of the village of Vidimalaka and other parcels of land to Náráyana Bhattáraka and the village of Ratnapalli on the north of the Ganges to Brahmeswara Bhattáraka. The subscribers to the deed were Kamalá the civil justiciary, Iswaridatta in command of the army, and Nanda Bhadra the writer. The names from the three plates are as follows :—

1. Salonáditya and his queen Sinhavali Devi.
2. Ichchhata Deva and his queen Sindhú Devi.
3. Desata Deva and his queen Padmalla Devi.
4. Padmata Deva and his queen Isála Devi.
5. Subhiksharája Deva.

There is little doubt that the year used by each of these princes is the year of his own reign, for we have the inscription of Desata Deva in the year 5, that of his son Padmata Deva in the year 25, and that of his grandson Subhiksharája Deva in the year 4 of the rising realm of victory ; we have therefore to look elsewhere for some clue to the date of these princes.

Through the kindness of Sir Henry Ramsay one of the Paudukeswar plates was sent to me by the Rawal of Badrináth, and a facsimile obtained by photozincography from the original is given here as well as a transliteration made under the supervision of Dr. Rajendralala Mitra,

C.I.E. A rough translation¹ of the entire five plates was also made through the latter gentleman, so that so far as these records are concerned we have full materials for the discussion of their date. The diction, style and form of all five is the same, showing that they all belong to the same period, the variations other than those in the description of the lands given away being of little importance. We have, moreover, in the records of the Pála rajas of Bengal a grant of similar diction and import which will aid us in arriving at a conclusion in regard to the date of our Kumaon rajas and which, if not completely decisive of the question, will at least be the nearest approach to the truth that we can hope for. We shall now give a facsimile, transliteration and translation of one of the Kumaon plates.

Transcript of an inscription from Páñdukeśvar near Badarindth.

- (१) स्वस्ति श्रीमत्कार्तिकेयपुरात्सकलामरदितितनुजमनुजविभु-
भक्तिभाषभरभारानमितामितानमाङ्गसङ्घिकटमुकुटकिरीट-
विटङ्ककोटिकोटिशेलोकता—
- (२) नाना(ताता)यक्रप्रदीपदीपदीधितिपानमदरक्तचरणकमलामल-
ःपुलबहुलकिरणकेशरासरसारिताशेषविशेषमोषिघनतमस्ते-
जसस्वर्धुनोधौतजटाजू—
- (३) टस्य भगवतो घूर्ध्वटेः प्रसादान्नजभुजोपाज्जितौर्जित्यनि-
र्जितरिपुतिमिरलब्धोदयप्रकाशदयादाक्षिण्यसत्यसत्त्वशील-
शोचशौर्योदार्यगाम्भोर्यमर्यादार्यवृत्ताश्चर्य—
- (४) कार्यवर्यादिगुणगणालंकृतशरीरः महासुकृतिसन्तानशोभा-
तारः कृतयुगागमभूपालललितकीर्तिः नन्दाभगवतीचरणकम-
लकमलासनाथमूर्तिः श्रीमिम्बरस्तस्यत—
- (५) नयस्तत्पादानुध्यातो राज्ञीमहादेवीश्रीनाम्नदेवीतस्यामुत्पन्नः-
परम माहेश्वरः परमब्रह्मण्यः शितकृपायधारोत्कृतमत्तेभकु-
म्भाकृष्टोत्कृष्टमुक्तावलीयशःपताका—

¹ The translation has been kindly revised through Dr. Mitra, but I am alone responsible for the translation and collation of the names of the officials and the comparison with other inscriptions.

- (६) च्छायचन्द्रिकापहसिततारागणः परमभट्टारकमहाराजाधिराजपरमेश्वरश्रीमदिष्टगणदेवस्तस्य पुत्रस्तत्पादानुध्यातो राक्षीमहादेवीश्रीवेगदेवीतस्यामुत्पन्नः परममा—
- (७) हेश्वरः परमब्रह्मण्यः कलिकलङ्कपङ्कतङ्कमग्नधरय्युद्धारधारितथैरेयवरवराहचरितः सहजमतिविभवविभुविभूतिस्यगितारातिचक्र प्रतापदहनः । अतिवैभव संहारारम्भसं—
- (८) भृतभीमभुक्तुकुटिलकेसरिसटाभीतभीतारातीभकलभभरः अरुणाखणकृपाखणगुणप्राणगणहठाकृष्टोत्कृष्टसलीलजयलक्ष्मीप्रथमसमालिङ्गनावलो—
- (९) कनवलह्यसखेटसुरसुन्दरीविधूतकरस्खलद्वलयकुसुमप्रकरप्रकीर्णशतंसम्बद्धितकीर्तिवीजः पृथुरिव दोर्दण्डसाधितधनुर्मण्डलबलावष्टम्भवश—
- (१०) वशीकृतगोपालनानिश्चलीकृतधरधरेन्द्रः परमभट्टारकमहाराजाधिराजपरमेश्वरश्रीमल्ललितशूरदेवकुशली अस्मिन्नेव श्रीमत्कान्तिकेयपुरविषये समु—
- (११) पगतान् सर्वानवनियोगस्थान् राजराजतकराजपुत्राष्टष्टामात्यसामन्तमहासामन्तठक्कुरमहामनुष्यमहाकर्तृकृतिरुमहाप्रतीहारमहादण्डनायकमहाराजप्रमातारथ—
- (१२) रभङ्गकुमारामात्यापरिकदुस्साध्यासाधनिकदशापराधिकचैरोद्धरणिकशैलिकशैलिकृतदायुक्तकविनियुक्तकपट्टाकापचारिकाशेषभङ्गाधिकृतहरत्यश्वोष्ट्र—
- (१३) बलव्यपृतकभूतप्रेषणिकदण्डकदण्डपाणिकगमागमिशास्त्रिकाभित्तरमाणकराजस्थानीयविषयपतिभोगपतिनरपत्यस्वपति— एडरप्रतिशूरि—

- (१४) कस्थानाधिकृतवर्त्मपालः कोटपालघटपालक्षेत्रपालप्रान्तपाल-
किशोरवरवागोमहिष्यधिकृतभट्टमहत्तमाभीरवणिक्रमेष्टपुरो-
गास्तष्टादशप्रभुः—
- (१५) त्याधिष्ठः नीयान्खण्डकिरातद्रविडुकलिङ्गशौरहूयोडूमेदान्प्रचा-
ण्डालपर्यन्तान्सर्व्वसम्बसान्मस्तजनपदान्भटाचटसेवकादान
न्याश्च कीर्त्तितानकीर्त्तितानस्य—
- (१६) त्यादपद्मोपजीविनः प्रतिवासिनश्च ब्राह्मणोत्तरान् यथाहै
मत्तयतिबोधयति समाज्ञापयत्यस्तु तेस्माद्विहितमुपरिनिर्दि-
ष्टविषये गोरुन्नसायां प्रतिबद्धखण्डिका—
- (१७) परिभुज्यमानपल्लिका तथा पण्णभूति कायां प्रतिबद्धगुग्गुलपरि-
भुज्यमानपल्लिकाद्वयं यते मयामातापिचोरात्मनश्च पुण्यय-
शोभिवृद्धयेपवनविघट्टिता—
- (१८) श्वत्थपञ्चवच्चलतरङ्गजीवलोकमवलोक्य जलवुद्धुटाकारमसारं
वायुर्दृष्ट्वागजकलभकर्णायचपलताञ्चालत्त्य त्वापरलोकनिःश्रेय-
सार्थसंसारार्णयोत्तरणार्थञ्च—
- (१९) पुण्येहनि उत्तारायणसङ्गान्तौ गन्धपुष्पधूपदीपोपलेपननेवेद्य-
बलिचरुनृत्यगेयवाद्यसत्त्वादिप्रवर्त्तनाय खण्डस्फुटितसंस्कर-
णाय अभिनवकर्मकरणा—
- (२०) य च भृत्यपदमूलभरणाय च गोरुन्नसायां महादेवीश्रीसाम-
देव्यास्त्रयंकारायितभगवते श्रीनारायणभट्टारकाय शासनदा-
नेन प्रतिपादिताः प्रकृतिपरिहरयुक्तः—
- (२१) ऋचाटाभटाप्रवेशः अकिञ्चित्प्रयाहाः अनाच्छेद्य आचन्द्रार्क्ष-
क्षितिस्थितिसमकालिकः दिपयादुद्धृतपिण्डास्थसीमगोचर-
पर्यन्तस्य वृक्षारामो हृदप्रसन्नयोपे—

- (२०) तदेवब्राह्मणभुक्तभुज्यमानवर्जिताः यतस्सुखं पारंपर्येण परि-
भुञ्जतश्चास्योपरिनिर्दिष्टैरन्यतरैर्व्या धरणविधारणपरिपान्य-
जनादिकोपद्रवो मनागपि न कर्त्त—
- (२३) ध्यो नान्यथा . . . महान्द्रोहः स्यादिति प्रवर्द्धमानविजयराज्य-
सम्बत्सगरकविंशतिमेसम्बत् २५ माघवदि ३ महादाना-
द्यपटलाधिकृतश्रीपीजकः । लि—
- (२४) खितमिदं महासन्धिविग्रहाक्षपटलाधिकृतश्रीमटायटायवना-
टङ्कोत्कीर्णो श्रीगङ्गभद्रेण । ब्रह्मभिर्व्वसुधा भुक्ता राजभिः सगरा-
दिभिः । यस्य यस्य यदा भूमिस्त—
- (२५) स्य तस्य तदा फलं । सर्वानेतान् भाविनः पार्थिवेन्द्रान्-
भूयो भूयो याचते रामभद्रः । सामान्योऽयं धर्मसेतुर्नृपाणां-
कलिकाल पालनीयो भवद्भिः । स्वदत्तां परदत्तां वा यो ह—
- (२६) रेत वसुन्धरां । षष्टिवर्षसहस्राणि श्वविष्ट्या जायते कृमिः ।
भूमेर्दाता याति लोके सुराणां हंसैर्दुक्तं यानमारुह्य दिव्यं-
लौहे कुम्भेतैलपूर्णं सुतप्ते । भूमेर्ह—
- (२७) र्त्ता पच्यते कालदूतैः । षष्टिवर्षसहस्राणि स्वर्गे तिष्ठन्ति भूमिद ।
आच्छेत्ताचानुमन्ता च तान्येव नरके वसेत् ॥ गामेकाञ्च सुवर्णाञ्च
भूमेरप्येकमङ्गलं । हृत्वा नरकमायाति यावदाहूतिसंग्रहं । यानीह
दत्तानिपुरा नरेन्द्रेर्दानानि धर्मार्थयशस्कराणि । निर्माल्य-
वन्ति प्रतिमानि तानि को नाम स. धुः पुनराददीत । — — —
- (२८) भ्रममिदं समुदाहरद्विग्नैश्च दानमिदमभ्यनुमोदनीयं ल-
क्ष्यास्तद्धित्थलिलबुद्धुदचञ्चलायाः । दानं फलं परयशः परि-
पालनञ्च ॥ इति कमलदल—
- (२९) विन्दुलोलमिदमनुचिन्त्य मनुष्यजीवितञ्च । सकलमिदमुदा-
हृतञ्चबुद्धा न हि परुषैः परकीर्तयो विलोप्याः ॥

Legend on the Seal.

श्रीमिम्बरस्तत्पादानुध्यातः ।

श्रीमदिष्टगणदेवः तत्पादानुध्यातः ।

श्रीमल्लितशूरदेवः त्रितीयः ।

PANDUKESWAR.

Be it auspicious : from the prosperous city of Kárttikeya. By the grace of the divine Siva, whose matted hairs are washed by the celestial stream of Ganga, whose lotus feet profusely shed an abundant shower of pure and resplendent pollen, the brightness of which dispels the endless varieties of the thick gloom (of ignorance), and which flushes with a vinous rubescence by imbibing the beams emitted from the lamps of the several chief gems of the terrific coronets, diadems and helmets of the lords of all the immortals, Daityas and human beings whose heads bow down under the heavy burden of devotion, did the prosperous King Nimbarana gain the glory of the rising sun by conquering the mist of his foes. His person was adorned with an assemblage of the qualities of clemency and dexterity, truthfulness and good manners, purity, heroism, munificence, graveness, respectability, Aryan conduct and wonderful and honorable acts, whereby he became an incarnation of the seed of an offspring of great virtues, and fond of a fame worthy of the rulers of the earth in the returning golden age, and resembling in his complexion the lotus feet of the goddess Nanda and of the lotus-seated Brahma. To him was born a son, a meditator on his feet, of his queen and great lady, the fortunate Náthu Devl. He was a devout worshipper of Siva, and devoted to the supreme Brahm. He, with the edge of a sharp sword, slew furious elephants, whose frontal globes scattered a series of excellent pearls, while the lustre of his lifted banner laughed to scorn the array of the stars. This was the most venerable king of kings and lord paramount, the prosperous Ishtagana Deva.

His son meditating on his feet, and begotten on his queen and great lady, the fortunate Vega Devi, is the most venerable and great king of kings and sovereign lord, the prosperous Lalita Sara Deva, the auspicious, who is a devout worshipper of Mahesa, and devoted to the supreme Brahm (or exceedingly liberal to Brahm). He has acted the part of the great boar encumbered with the weight of the earth by delivering it from drowning under the dread of the dirt of the sinful age of Kálí. He possessed an exuberance of natural genius and super-human prowess, whereby his blazing valour withstood the hosts of his encompassing enemies. Being ever ready in his preparations for war, by the vast resources of his wealth, he, by the terrific frowns of his brows, bore an intimidation to his enemies, as the curling mane of the lion affrights the cub of the elephant. He, by his restless sword and arrows in battle, has slain many a soul (in warfare), and violently seized on the goddess of prosperity in victory, as if he had dragged her from underneath the waters (of the deep). The damsels of heaven viewing this reverse of fortune with affliction at his embraces to her, dropped down the bracelets from their trembling wrists, which, strewn like wreaths of flowers, formed his head-dress (as if it blossomed), to mature the seeds of his glory. Like Frisna his arms were

inured to the bending of the bow, by the force of which he subdued and protected the world and established its monarchs.

All the people assembled in the fortunate city of Kārttikeyapura,¹ all—

L.	II.	III.	IV.	V.	VI.	
...	1	1	1	1	...	<i>Niyogasthān</i> : those employed in public affairs.
...	2	2	2	2	...	<i>Rāja</i> : kings.
1	3	3	3	3	1	<i>Rājanyaku</i> : princes (cf. title Rainsa in Nepāl and Doti).
2	4	4	4	4	2	<i>Rājaputra</i> : sons of Rajas (or Rajpūts ?).
3	5	5	5	5	3	<i>Rājamātya</i> : counsellors of the Raja.
...	6	6	6	6	..	<i>Sāmanta</i> : neighb uring tributary princes.
7	7	7	7	7	6	<i>Mahāsāmanta</i> : commander-in-chief.
4	10	10	8	8	9	<i>Mahāshaktikṛittika</i> : chief investigator of all works.
5	12	12	9	9	11	<i>Mahādandanayaku</i> : chief officer of punishment.
6	11	11	10	10	8	<i>Mahāpratidhān</i> : chief warder.
...	...	...	11	11	...	<i>Mahāśamantādhipati</i> : chief of the feudatory princes.
...	13	13	12	...	...	<i>Mahārāja</i> : chief Rajas.
10	14	14	13	...	...	<i>Prumādra</i> : keeper of the records of measurements, surveyors.
11	15	15	14	...	...	<i>Śrabhaṅga</i> : archers (a local mountain tribe?).
9	16	16	15	...	12	<i>Kumārāmātya</i> : counsellor of the heir-apparent.
13	7	17	16	...	13	<i>Udadhika</i> : superintendents.
8	18	18	17	...	10	<i>Duḥśādhyaśāhanika</i> : overcomers of difficulties.
14	19	19	18	...	14	<i>Doshaparādhiika</i> : investigators of crimes.
15	20	20	19	12	15	<i>Chowaddharanika</i> : thief-catchers.
18	21	21	20	13	18	<i>Saulhika</i> : superintendents of octrol.
19	22	22	21	14	19	<i>Gaulmih</i> : soldiers.
24	23	23	22	15	24	<i>Tadāyuktaka</i> : former officials.
25	24	24	23	16	25	<i>Viśiyuktaka</i> : officials on detached duty.
...	25	25	24	17	...	<i>Pattakā</i> : engravers (?).
...	26	26	25	18	...	<i>Pachārika</i> : draught-players (?): or <i>Pattahopachārika</i> , wardrobe-keepers.
...	27	27	26	19	...	<i>Saudhabhaṅgādhiikṛita</i> : chief architects.
26	28	28	27	20	26	<i>Hastyaśvotravala</i> : keeper of elephants, horses and camels.
...	29	29	28	21	...	<i>Vyāpṛitaka</i> : secretaries or ambassadors.
28	30	30	29	22	...	<i>Hātapreshanika</i> : chamberlains or messengers.
16	31	31	30	23	16	<i>Dāndika</i> : waco-bearers.
17	32	32	31	24	17	<i>Dāndapāsika</i> : keeper of the instruments of punishment.
...	...	...	32	25	...	<i>Viśaya-vyāpṛitaka</i> : district secretaries.

¹ The titles of the officials to whom the grant is addressed follows here and the order of the names in each grant is given in the columns to the left. I—the Mungir plate; II—the Pandukeshwar plate of Lalitāsūra forming a portion of the text translated here; III—Lalitāsūra's second plate; IV—Padma Devī's plate; V—Subuksharjā's plate and VI—the Bhāgnipur plate.

I.	II.	III.	IV.	V.	VI.	
29	33	33	33	26	29	<i>Gandgamiha</i> : messengers.
...	34	34	34	27	...	<i>Khālgika</i> : swordsmen.
30	35	35	35	28	30	<i>Abhivaramnaha</i> : swift messengers (<i>manika</i> , <i>miner</i> ?).
...	36	36	36	29	...	<i>Rājasthāntya</i> : officers of the royal household.
31	37	37	37	30	31	<i>Vishayapati</i> : district officers.
...	38	38	38	31	...	<i>Bhogapati</i> : provincial governors.
23	...	...	39	32	23	<i>Khandapati</i> : chiefs of wards in cities (<i>muhallads</i>).
32	39	39	40	33	30	<i>Tarapati</i> : chiefs of the ferries.
...	40	40	41	34	...	<i>Asvapati</i> : commanders of cavalry.
...	41	41	42	35	...	<i>Khandarakhasthānadhīpati</i> : chief of the frontier posts.
...	42	42	43	36	...	<i>Vartmapālaka</i> : road guards.
32	43	43	44	37	22	<i>Koshopāla</i> : treasurers or <i>kottapāla</i> (<i>kotwāla</i>).
...	44	44	45	38	...	<i>Ghatpāla</i> : guards of passes (<i>Ghatwāla</i>).
...	45	45	46	39	20	<i>Kshetrapāla</i> : guards of fields.
21	46	46	47	40	21	<i>l'rantapāla</i> : guards of boundaries.
...	8	8	48	41	...	<i>Thakkurā</i> : the (khasiya) khsatriya tribe.
...	9	9	49	42	...	<i>Mūhāmānushya</i> : men of importance (village-headmen ; cf. <i>bhūlamanush</i>).
27	47	47	50	43	27	<i>Kisoravadava go mahishyadhikṛita</i> : keepers of colts, cows and buffaloes.
...	48	48	51	44	...	<i>Bhāttamahottama</i> : most learned men.
...	49	49	52	45	...	<i>Abhira</i> : Cowherds (<i>ahira</i>).
..	50	50	53	46	...	<i>Banik</i> : merchants (<i>baniyas</i>).
...	51	51	54	47	...	<i>Sreshthipuroyda</i> : chiefs of city, guilds : (<i>chaudāris</i>).
...	52	52	55	48	...	<i>Sāshtālagaprakṛityadhishṭhānyā</i> : superintendents of the eighteen departments.

together with Khaans, Draviras, Kalingas, Gauras, Odhras, Anchras down to Chāndālas, all peoples and places, all soldiers, slaves, and servants and others, whether mentioned here or not, who depend upon our royal feet, know ye, mark ye this Brahmanottara.

Be it known to you that the village situated in Gorunna Sāri within the aforementioned estate, which is now in the possession of Khasliaka, as also that in the possession of Gugula, and situate in the Pālī of Bhutikā, these two villages are given by me by means of the grant of this edict, ordered to be made at Gorunna Sāri by the great queen Soma Devi herself to the reverend Nārāyaṇa Bhattāraka, for adding to the merit and reputation of my parents and of myself, by observing the living world to be as unsteady as the leaf, the *figs religiosa*, and the billows moved by the breeze and by seeing this life to be as vain and void of substance as the form of a bubble of water, as also by knowing the instability of fortune, likened to the unsteadiness of the tips of a young elephant's ears, for the sake of (obtaining) beatitude in the next world, and salvation in the ocean of this, on this meritorious day of the winter solstice, accompanied with diffusion of fragrant flowers, incense, lights and ointments, with offerings, sacrifices,

oblations, dancing, singing and music for the performance of the feast, and purification (correction) of all omissions and errors in the new act, as also for expediting the feet of our servants, and further conferring the right to debar the ingress of all government officers therein, also exemption from every duty and a perpetuity contemporaneous with the continuance of the sun, moon, and earth. They are to remain as parcels detached from the estate as far as their visible boundaries, with all the trees, arbours, springs, and cataracts contained in them, and free from all past and present usufructs, of gods and Brahmans therein. The possessor thereof having full rights for ever and ever as defined herein, must not at all be annoyed by seizure, resumption, robbery, or any other disturbance, under a heavy penalty attendant upon any violation of this commandment. In the year of the rising kingdom of victory (*prāvarddhama vijayarājya*) twenty-one Samvat 21, the third day of the waning moon of Magha. The deputies in this affair are the chief justice of lawsuits concerning gifts and grants, named Sri Vijaka, the writer hereof, and the chief arbiter of cases relating to peace and war, Sri Aryatta, by whose order this plate is inscribed by Ganga Bhadra.

(Verses.)

1. "This earth has been in the possession of several kings, commencing with Sagarā. Whoever becomes the owner of land at any time, he then reaps the fruits thereof.

2. Rāma Bhadra hath required of all future princes of the earth that they preserve from time to time the bridge of their beneficence.

3. The donor of lands ascends to the abode of the gods, mounting on a heavenly car yoked with hansas (swans). But the resumer of lands is boiled in an iron caldron filled with hot oil by the delegates of the regent of death.

4. Whoever resumes lands given either by himself or others may he be born as a worm to remain in filth for full sixty thousand years.

5. The donor of lands dwells in heaven for sixty thousand years, but the resumer and his counsellor remain in hell for the same number of years.

6. The appropriator of a village, a gold coin, or one inch of ground, enters into hell to remain there until the return of the offerings.

7. What man is there who can deny gifts made by former lords of men for the sake of plety and renown, and attested by the articles of sacred offerings.

8. From this example of our caution against resumption by our posterity, let others adopt the same in regard to their own donations, and know that gifts and gain of renown are the only benefits of prosperity which is as unsteady as a flash of lightning or a bubble of water.

9. Unsteady as the dewdrop on the lotus leaf, so fleeting is fortune, and so brief is human life. Considering these, and knowing the donor's name, no man should destroy the deeds of another's reputation."

I have not thought it necessary to reproduce here the Mungir
The Kumaon and Pāla inscription¹ of the Pāla Raja, Deva Pāla
lates. Deva or the Bhāgalpur² inscription of the

¹ This plate, of which a copy is given in A. S. Res., I., 123, was translated by Mr. Wilkins in 1781. It was discovered amid the ruins of Mungir by Colonel Watson.

² J. A. S. Res., XLVII., i., 264.

Pála Raja Náráyana. The Mungir inscription calls Deva Pála a *sat-gata*. His genealogy is traced from Go Pála, whose son was Dharma Pála, of whom it is said :—"He went to extirpate the wicked and plant the good and happily his salvation was effected at the same time : for his servants visited Kedára and drank milk according to the law." Deva Pála succeeded and 'peaceably inherited the kingdom of his father as Bodhisattwa succeeded Sugata.' He also is said 'to have conquered the earth from the sources of the Ganges as far as the well-known bridge which was constructed by the enemy of Dusásya,' i.e., from Garhwál to Cape Comorin. The characters in the five Kumaon plates are the same and belong to the earlier form of the *kutila* or 'bent' alphabet of which we have several examples from the eighth to the tenth century. A comparison with the form of the letters on the Mungir and Bhágalpur plates shows that they also belong to the same class. The tribal name of the writer is the same in all six records. In the plates of Lalitasúra Deva, the writer is Ganga Bhadra, in that of Desata Deva it is ** Bhadra ; in those of Padma Deva and Subhiksharája Deva it is Nanda Bhadra and in the Pála plates we have Binda Bhadra on one and the Bhatta Gurava on another. In the Buddal Pála inscription the name is Binda Bhadra. The very remarkable list of officials common to all the plates has been analysed in the translation of the Kumaon plate. The coincidences in order and position in this respect cannot be accidental and clearly shows that all were derived from one common original in the family of the professional scribes whose tribal name was Bhadra. The form of dedication is the same in all and also the precatory verses attached to each grant. An examination of the names of the officials shows that it is improbable that all of them could not have existed in a small hill state, especially such as the keepers of camels and elephants and the commanders of cavalry. This portion of the form of the grant is clearly borrowed from that in use in a larger and more important state in the plains. Another point of resemblance is that both the hill grants and the Pála plates are dated from some unknown local era and in the hills clearly from the accession of the reigning monarch, a practice presumably also borrowed from the Bengal Rájás. The hill plates are still in possession of the representatives of the grantees and there is not the slightest reason for

believing them to be other than genuine; in fact not one of their present possessors can decypher a single line much less attempt a meaningless forgery of this nature.

Turning to the Pandukeswar plates we learn that Nimbarata Deva's reign was remarkable for some great contest with, we may suppose, a foreign foe. Nimbarata Deva himself is said to have vanquished his enemies as the rising sun dispels the mist, and his son Ishtagana Deva 'with the edge of his sword slew furious elephants.' If we accept this statement the elephant could hardly be used by one hill-tribe against another, so that the invader must have come from the plains and been met by the Katyúris at the passes into the hills, for within the hills themselves elephants could hardly be used. Lalitasúra Deva, however, is the prince who is most praised for his successes in war. Ever ready in his preparations for a campaign and aided by his vast wealth, he was found resistless and 'established the monarchs of the earth.' In the Pála inscriptions Go Pála is likened to Prithu as Lalitasúra is in his inscriptions. In the Buddal inscription of the minister Gurava Bhatta, the empire of Deva Pála is said to have extended from the Mahendra mountain to the Himálaya.

Of the second series of Kumaon plates those of Desata Deva and his son Padmata Deva are dated from Kárttikeyapura in the same manner as those of Lalitasúra Deva and that of Subhiksharája Deva are dated from Subhikshapura, most probably another name for Kárttikeyapura or a suburb thereof. They do not mention any Rája of the previous lists, but the character of the writing, the style and form, the name of the scribe, and the place from which they are dated is the same as in the former group. As these grants of Lalitasúra connect themselves by the names of the Rájas with the Bágéswar inscription from which they differ in form, this group must be considered as following those of Lalitasúra Deva, at no great distance of time. The two first records were written by the same scribe and all give a literally identical account of Salonáditya, ascribing to him many virtues and success in battle. All agree also in passing over his son Ichhata Deva with the simple record of his birth, and little more is said of his successor Desata Deva than that he and his mother were devout worshippers of Siva and Brahma and were exceedingly liberal to Brahmans and

the poor. Of Padmata Deva it is said that he was a devout Saiva and "acquired by the might of his arms unnumbered provinces on all sides, the owners of which coming to make him obeisance poured forth such incessant gifts of horses, elephants and jewels before him that they held in contempt the offerings made to Indra. He resembled Dadhichi and Chandragupta in his conduct and mastered the earth, stretching to its zone, the reservoir of the ocean." His son Subhiksharāja Deva was a "Vaishnava, devoted to the supreme Brahma and a patron of those learned in the Shāstras," besides being adorned with many virtues. We can glean little more from the descriptions in these grants beyond what is given above.

With regard to the localities mentioned, the two grants of Lalitasūra Deva are addressed to the officials and others in the district of Kārttikeyapura. One is translated here and need not be further noticed. The second conveys a similar grant to the same person of Thapyala Śāri in the possession of Indra Vāka to provide for the necessities of the religious anchorites residing at Tapuban, a place on the right bank of the Dhauli above Joshimath, which will show that this village was still in the Kārttikeyapura district. The grant of Desata Deva is addressed to the officers in the Esāla district and bestows the village of Yamuna in the possession of Nārāyana Varmana on Vijayesvara. The grant of Padmata Deva is addressed to the officials of the district of Tanganapura and that of Subhiksharāja Deva to the officials of the districts of Tanganapura and Antarānga. Tanganapura has already¹ been identified with the tract above the confluence of the Bhāgirathi and Alaknanda and Antarānga with the country lying between those rivers. The first of these two bestows certain lands on the temple of Badarikāsrama. There were four villages in Drumati in the possession of the Aditya family of Buddhāchal together with fifteen shares (*bhāga*) in Pangara also in Drumati, also the *vr̥tti* of Ogala in Yoshi and another patch on the banks of the Gangāpadi, an accretion to Sankrīma, as well as the fields detached from Ulīka. Also the land near the great banyan-tree in Kākasthal village in Drumati and two *dvāras* of land in the Randayaka village in Yoshi.

¹ Page 357.

In the grant of Subhiksharāja Deva there is a long list of villages and lands conferred on two priests, and amongst them the following which are given so that hereafter possibly they may be identified :—

“ Land in Vidimalāka belonging to Vachchhetaka : in Bhetha Sāryya ; measuring eight *adhis* ; in Bāriyāl, measuring four *dronas* ; in Vanlika ; also an accretion from Kandayika to Sarana belonging to Subhattaka ; a piece called Satika ; also one called Yachchha Saddha, held by Gochittangaka Talla Sāta belonging to Vihāndaka ; Kshira belonging to Vena Vāka ; Gangaraka belonging to Soshi Jivāka ; Pettaka ; Kathasila ; Nyāyapatiśka ; Bandiwala belonging to the Adityas ; Ichhawala, Vihalaka and Maharjyāka ; Khora-khotanka belonging to Silāditya ; in Harshapura, land formerly belonging to Parabhāna Ungaka now in the estate of Durga Bhatta ; also new land in Varoshika belonging to the Sittakas, Ussoka, Vijjata, Dujjana, Attanga, Vāchataka and Varāha ; Jatipātaka in Ijjara ; Samjjīya ; Gododha in Pairi belonging to the sons of Satraka ; Ghasmengaka in Yoshika ; Sihāra ; Balfvardda and Sila ; Ihanga ; Bullaṭha ; Tiringa ; Kattanasila ; Gondodārīka ; Yuga ; Karkatathāla ; Dālimūlaka belonging to Ghara Nāga ; Dāraka belonging to Sirwāla ; Karkarāta belonging to the Vijāyānas ; Chidhārīka belonging to the Katusthikas ; Randavaka ; Loharasa belonging to Tungāditya ; also land in Yoshika ; Ratnapalli near Sadāyika with the following limits : west of the boundary of Sankata, east of Andāriganika, north of the Ganga ; and south of the village of Tamehaka belonging to the sons of Senāyika.” The donees are Nārāyana and Brahmeswara, who appear to have been the officiating priests of the temple of Durga Devi. The tribal names Vāka, Jivāka, Aditya, Vijāyāna and Katusthi do not appear to occur now, but we have Manivāka as the name of one of the sons of the ruler of Saka-dwīpa and in the Bharhat sculptures.

The countries enumerated as subject to the Rājās who caused the grants to be inscribed are worthy of notice here. We shall accordingly place the statements of the six inscriptions together for comparison—

Rāja's name.	Date of grant.	Tribes to whom it is addressed.
1. Lalitasāra Deva ...	21	Khasas, Draviras, Kalingas, Gauras, Odras, Andhras, Chāndālas.
2. Ditto ...	22	The same with the addition of Kirātas, Hūnas and Medas.
3. Desata Deva ...	5	Khasas, Kalingas, Hūnas, Gauras, Medas, Andhras, Chāndālas.
4. Padma Deva (son of Desata).	25	Same as No. 2, omitting Andhras.
5. Subhiksharāja Deva (son of Padma)	4	Same as No. 2.
6. Deva Pāla Deva ...	33	Gauras, Mālavas, Khasas, Hūnas, Kalingas, Karnātas, Lāsātas, Bhotas, Medās, Andhrakas, Chāndālas.

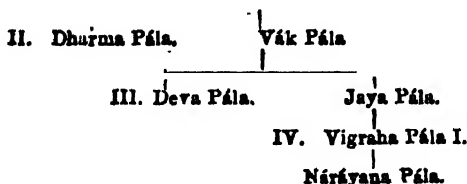
The Mungir plate contains four names not given in the Kumaon plates, those of the Málavas, Karnátas, Lásátas, and Bhotas. We have already seen that the Málavas were a Panjáb tribe who after several changes of abode eventually gave their name to the part of Central India now called Malwa. The Karnátas were a southern tribe who have also left their name behind them in the Carnatic. The Lásátas and Bhotas are spoken of together and quite correctly. Lhása was made the capital of the first really independent Tibetan State in or about 640 A.D. and the Bhotas represent the Chi-ang and wandering tribes not subject to Lhása and indeed the common people of Tibet generally. There was constant intercourse between the Buddhist people of Tibet and their fellow Buddhists in Magadha. The Mungir inscription shows that Deva Pála was a Buddhist, though one of a very liberal mind. The names of Lhása and Bhotas have properly been omitted from the Kumaon inscriptions, as Kumaon was too near those countries to permit of their submission being recorded as a matter of fact. The insertion, too, of the names Dravira in southern India, Kalinga on the Coromandel coast, Ódra or Orissa, Gaura in Bengal and Meda in the Panjáb or indeed of any other names than those of the Khasas and Kirátas must simply be due to the existence of these names in the original form from which the Bhadrás of Kumaon copied the terms of the grant.

In a grant of Náráyana Pála lately discovered at Bhágapur and translated by Dr. Mitra¹ we have a second record quite as full as that of the Bhágapur plate. The Mungir plate and some important rectifications of the genealogy. "The record opens with a stanza in praise of Go Pála, who was a devout Buddhist and a follower of Sugata. His son and immediate successor was Dharma Pála. The latter had a brother named Vák Pála, who lived under his sway. On his death Deva Pála, the eldest son of his brother, succeeded him. Vák Pála had a second son named Jaya Pála, who is said to have brought Orissa and Allahabad under his brother's government. On the death of Deva Pála, Vighraha Pála, the son of Jaya Pála, came to the throne. Vighraha Pála was succeeded by his son Náráyana Pála, the donor of the grant." We have

¹ J. A. S. Ben., XLVII., 1., 264f.

accordingly to revise the indications afforded by the Mungir plate thus :—

I. Go Pála.



The donee's name was Siva Bhattáraka, a name found also in the Ballabhi grants, and the record was composed by Bhatta Gurava,¹ the minister who erected the Buddal pillar. The latter is a record of the family of this minister and contains the names of Panchal and Gaya and of the son of Garga called Darbhapáni, of whom it is recorded that by his policy "the great prince Deva Pála made the earth tributary from the father of Reva, whose piles of rock are moist with juice from the heads of lascivious elephants, to the father of Gauri, whose white mountains are brightened with beams from the morn of Isvara and as far as the two oceans whose waters are red with the rising and with the setting sun." Here Deva Pála is credited with the conquest of the country from the Mahendra mountain which contains the source of the Reva to the Himavat who was father of Gauri. To Darbhapáni was born Someswar and to him Kedára Misra, trusting to whose wisdom, "the rája of Gaur for a long time enjoyed the country of the eradicated race of Utkala (Orissa) of the Húnas of humbled pride, of the kings of Dravira and Gujara whose glory was reduced and the universal sea girt throne" * * "To him, emblem of Vrihaspati and to his religious rites, the prince Sura Pála, who was a second Indra and whose soldiers were fond of wounds, went repeatedly." Kedára-Misra had a son Gurava Misra, who was greatly respected by the prince Náráyana Pála and who caused the record to be inscribed by Binda Bhadra.² We may also note that the donee in Deva Pála's inscription was a Misra. In the *Áin-i-Akbari*, Abul Fazl

¹ The Guravas in western India enjoy a monopoly of the service in Salva temples and have a right to the offerings made: *Ind. Ant.*, III., 77. ² *As. Res.*, I., 133; this is translated by Mr C. Wilkins, with notes by Sir W. Jones. The inscription was found on a stone pillar near Buddal on the boundary of the Dinápur and Boghra districts in Lower Bengal, about forty miles south-east of Dinápur, in 1786.

gives¹ the names of seven so-called Vaidya rajas of Bengal ending with Náráyana, whose successor Lakshmaniya was expelled by Muhammad Bakhtiyár Khilji in 1203 A.D. Before these Vaidyas occur the names of ten Pála rajas, all of which except the first three are wanting in their proper places in the inscriptions. The length of many of the reigns also is so absurdly prolonged as to render this tradition utterly worthless.

Vassilief in his work on 'Buddhism' states,² on the authority of Táránáth, that the origin of the Pálas was in this wise. On the extinction of the Chandra dynasty as a ruling power in eastern India; in Oriṣsa and Bengal and in the other five provinces of the east, each Kshatriya, Brahman and merchant constituted himself king of his surroundings, but there was no king ruling the country. The wife of one of the late kings assassinated by night every one of those who had been chosen to be kings, but after a certain number of years Go Pála, who had been elected for a time, delivered himself from her and was made king for life. He began to reign in Bengal, but afterwards reduced Magadha under his power. He built the Nánandara temple not far from Otantapura and reigned forty-five years. Sri Harsha was at this time reigning in Kashmír. Go Pála was succeeded by his son Deva Pála, who greatly extended his kingdom and re-established the Buddhist religion. He reigned forty-eight years and was succeeded by his son Rasa Pála, by a daughter of Vibharata, king of Gajana. After twelve years he was succeeded by Dharma Pála, who reigned sixty-four years and was a contemporary of Tissong l de-b tszan.³ The successors were—

Basurakshita, son-in-law of Dharma Pála, reigned eight years.

Vaná Pála, son of Dharma Pála.

Mahi Pála, reigned fifty-two years, contemporary of Khri-ral.

Mahá Pála, son of Mahi Pála, reigned four years.

Sámu Pála, son-in-law of Mahá Pála, reigned twelve years.

Sreakta, eldest son of Mahá Pála, reigned three years.

Chánaka, maternal uncle of Sreakta, reigned twenty-nine years.

Bheya Pála, nephew of Chánaka, reigned thirty-two years.

¹ Gladwin, II., 21. The following names with the length of reigns are given:— Bhupála, 55; Dharpála, 85; Droopála, 88; Bhupatipála, 70; Dhanpatpála, 45; Bijjimpála, 75; Jayspála, 98; Rajaspála, 98; Bhogpála (brother of Rajaspála), 5; Jagadpála (son of Bhogpála), 74. Bhupála may be identified with Go Pála; Dharpála or more correctly Dharpála with Dharmaspála and Deshpála with Devapála.

² 'Le Bouddhisme,' LeComte's translation of Vassilief, p. 44; Arch. Ésp. III., 183; Ind. Ant. IV., 366.

³ Khri-song, 759-765 A.D.

Neya Pála, son of Bheya Pála, reigned thirty-five years.

Amar Pála, son of Neya Pála, reigned thirteen years.

Regency for eight years.

Hasti Pála, son of Amra Pála, reigned fifteen years.

Kahánti Pála, maternal brother of Hasti Pála, reigned seventeen years.

Ráma Pála, son of Hasti Pála, reigned forty-six years.

Then came Lava Sena and expelled the Pálas. Most of these names are hopelessly out of accord with existing inscriptions.

In 1806, a grant inscribed on a copper-plate was found at Amgáchhi¹ in parganah Sultánpur in the Dinájpur district, a place about fourteen miles from Buddal. It contained the name of Vighraha Pála Deva and some others and was dated in sanvat 12. In an inscription from Sárnáth, however, we have a dated record clearly belonging to the Pálas. It was discovered on a figure of Buddha near Benares by Mr. Jonathan Duncan in 1794 and bears the date samvat 1083, equivalent to 1026

Sárnáth inscription. A.D. The writing has been translated by Colonel Wilford and again by General Cunningham, whose version² is as follows:—

“Adoration to Buddha. Having worshipped the lotus foot of Srf Dhama-ráa, sprung from the lake of Vará nani, and having for its moss the hairs of prostrate kings, the fortunate Máhipála, king of Gaura, caused to be built in Káil hundreds of monuments, such as Isána and Chitrabhanta. The fortunate Sthira-pála and his younger brother, the fortunate Basanta-pála, have renewed religion completely in all its parts and have raised a tower (*stúpa*) with an inner chamber (*garbha-kuti*) and eight large niches, samvat 1083, the 11th day of Pausha.”

As now translated the date should be assigned to the buildings of Sthira Pála and his brother Basanta Pála, who were contemporaries of Mahi Pála, who according to the Amgáchhi plate was himself a successor of Vighraha Pála II. General Cunningham's new reading and translation will set at rest the discussion regarding the names and dates raised on Wilford's imperfect transcript.³ In another inscription⁴ on the base of a statue of Buddha the ascetic found by General Cunningham in Buddha Gaya we have the name Mahipála and in the second line containing the date the following formula:—

¹ As. Res., IX., 442; Colebrooke's Essays, II., 279; J. A. S. Ben., XLVII., 1., 307.

² Arch. Rep., III., 121.

³ As. Res., V., 188; J. A. S. Ben., IV., 211. Lassen makes the successors of Náráyana Pála rulers of Kanauj and connects with them the name Yasah Pála found in an inscription dated in the year 1026 A.D.; see Colebrooke Misc. Ess., II., 277; J. A. S. Ben., V., 732.

⁴ Arch. Rep., III., 122.

"*Parama bhattachāka, parama saugata, Sriman Mahipāla Deva pravarddhamāna vijaya rāje (rājye?) * * dasame samvatsare,*"

which General Cunningham translates:—"In the 10th year of the prosperous and victorious reign of the paramount king, the eminent Buddhist, the fortunate Mahipāla Deva." Here we have the exact formula used in the dates of the Pandukswar plates and which we have translated "in the year of the rising realm of victory." We have other inscriptions of Go Pāla, Vighraha Pāla, Mahi Pāla, Naya Pāla, Rāma Pāla Deva, Mahendra Pāla Deva, Govind Pāla Deva (1175 A. D.), all of which except the last are dated in regnal years.

General Cunningham¹ takes the names from the Amgāchhi plates and adds to them the name Deva Pāla from the Mungir plate and that of Sura Pāla from the Buddal pillar. He takes the date of the Sārnāth inscription as settled and allowing 25 years to each of the thirteen names in his list between Vighraha Pāla II. and Go Pāla, places the latter in 765 A.D. The rectification in the list due to the Bhāgalpur plate reduces the number of names and in addition the average of 25 years for each reign is excessive and even the 20 years given by Dr. Mitra² is far too high. Allowing the 20 years to each reign assumed by Dr. Mitra and accepting the Sārnāth date we have the following result:—

	A.D.		A.D.
Go Pāla	... 855	— Pāla	... 975
Dhātma Pāla	... 875	Vighraha Pāla II.	... 995
Deva Pāla	... 895	Mahi Pāla	... 1015-40
Vighraha Pāla I.	... 915	Naya Pāla	... 1040
Nārāyana Pāla	... 935	Vighraha Pāla III.	... 1080
Rāja Pāla	... 955		

This calculation assigns the accession to power of the Pāla dynasty of Magadha to the latter half of the ninth century. Those who have followed the remarkable coincidences in form, language and recorded facts between the grants of the Bengal Rājas and those assigned to the Kumaon Katyūris will readily see that all are

¹ Arch. Rep., III., 125: the initial date of Go Pāla is given as 765 A.D. at p. 124 and as 860 A.D. at p. 139. ² J. A. S. Rep., XLVII., I., 394. ³ Ibid., VII., 40: XXIV., I., 139; XLVII., I., 402.

derived from a common original. The quaint list of officials to whom the grants are addressed has no parallel elsewhere. We find it, in a modified form, in the inscriptions of the Senas, the successors and in part the contemporaries of the later Pálas. In the Búkirganj inscription of Kesva Sena (1136 A.D.) the following titles occur:—

‘Samupagatáséscha rāja rājanyaka rājñibdlaka rājanputra rājdmátya mahápurohita mahádharmmádhyañd mahásándhivigrahiku mahásenápati mahásauhsádhiká chárodwaranika naubala hastyaswagomahishájvikádi vyáprita gaulmika dandapásika dandanáyaka neyayapatyáddínanyánscha sakalarájyádhipajv-nodhya kshanodhya kshapraravánscha chhattabhatajattyan, Bráhmanabrákshmanottaranscha.’

Here, too, the grant is dated in sanvat 3. A similar formula occurs in the Tarpanighi inscription of Lakshmana Sena¹ dated in sanvat 7.

The short list of officials given in the grants of the Ráthor Rajas of Kanauj² has nothing in common with these Pála lists and we have to look for their origin elsewhere. We think that this will be found in the influence of the Hindu revivalists from western India, for the beginnings and germs of these lists are traceable from the Vallabhi grants of Gujrát onwards in western inscriptions.³ The Gurava who was minister of the Pálas was a Bhatta, a family who for generations were scribes of the rulers of Gujrát and the Guravas are to this day in charge of the Saiva temples in western India. The practice of dating in regnal years was general in western India after the reign of Vikramáditya VI. (1075 A.D.), of whom Mr. Fleet observes⁴ that:—“After his time it became the custom for his successors, as a rule, to date their inscrip-

¹ *Ibid.*, XLIV., 1.

² *Ibid.*, XLII., 227; dated in 1231 A.D.

³ Dhruvasena I. has the title Dandanáyaka, *Ind. Ant.*, IV., 107; see especially Guhesens's inscription. *Ibid.*, p. 175, and the plate edited by Prof. Bhándárkar in *J. B. E. A. S.*, X., 77, and the Gurjjara grants of Dadda in *Ind. Ant.*, VII., 61. In an inscription found at Seoni we find a grant of Pravarasena, Raja of Vákátaka, in which the form of the date of the grant is somewhat similar to that given in the Pandukeswar plates;—“*pravarddhamána rájyasena tsara ashtádasam*. Prinsep translates this sentence, “in the eighteenth year of his reign,” but notes that it may mean ‘date of the growing (or current) reign’. Vákátaka lay between the Bay of Bengal and the Sri Salla hills to the south of Haidarabad; *ante*. The Jaina Merutunga mentions the ‘*Vikrama Raja rájya-kála*’ or dynastic year of Vikrama which commenced 17 years earlier than the Vikrama era or *Rájya-arambha*: *J. B. E. A. S.*, IX., 149; *J. A. S. Ben.*, V., 726. ⁴ *Ind. Ant.*, VII., 180, 302; VIII., 192.

tions not in the Saka era but in the years of their reigns coupled with the name of the *samvatsara* of the particular year under reference." This is not strictly in accordance with the Kumaon practice, but it is of a similar nature and is another link in the chain connecting Kumaon with western influences. The formula for the regnal year occurs in a Pála inscription already noticed in exactly the same peculiar words as those used in the Pandukeswar plates, but it is also the 'standard formula' in Chalukya grants² and occurs in one of Udyotaka Kesari Deva³ of Kalinga. The form of dedication and the precatory verses at the end are common³ to all India. We have, however, the tribal name of the scribes the same in all the Pandukeswar and many of the Pála grants.

In addition there is the express statement that Dharma Pála visited Kedár, a connection that was kept up by Deva Pála, and it was in their time (the latter half of the ninth century) that these Pandukeswar grants were inscribed. We are not without further evidence to show a connection between Bengal and Kumaon. The Senas,⁴ who followed the Pálas in Mágadha, have left an inscription at the great temple of Jageswar beyond Almora, which though very imperfect allows the name Mádhava Sena to be read. The Rájas of Mágadha are distinctly mentioned in the Nepál annals as having made incursions into the hills. Go Pála was probably the first to extend his dominion northwards and his conquest was confirmed and enlarged by Dharma Pála, whose generous treatment of the vanquished in sending them back to their own country laden with presents was so unusual that the conquered when reflecting on the deed 'longed to see him again.' It is evident, therefore, that there was no permanent occupation of the country and instead a semi-friendly relation arose which was further cemented by the enlistment of followers of the Bengal Rája in the service of the hill chief. It is to these circumstances that we owe the occurrence of the names of the hill-districts of *Lásáta* and *Blot* in the Pála inscriptions. It may be suggested that all these records should be referred to an intrusive Bengal colony settled in the Katyúr valley, but with existing materials this theory must be negatived.

¹ *Ibid.*, X., 60. ² J. A. S. Ben., VIII., 557. ³ Cf. Burnell's
 'Elements of South Indian Palaeography,'
 J. A. S. Ben., XLVII, 1., 356. ⁴ Thomas's Prinsep, II., 272.

There is little in the nature of records that can be relied upon to help us in ascertaining the time when the power of the Katyúris began to decline, but there are several traditions as to their dispersion which will aid us in estimating the causes of their downfall. One of these causes was the tyranny and incapacity of the later Katyúris. The curse pronounced on the family by Nār Sinha worked through them as the following story regarding Dham Deo and Bir Deo will show :—“The revenue of the country was collected in kind and it was customary to give out a part of the grain brought into the Rájá's treasury to be ground for the use of the household. Each village took its turn to prepare the flour, as a customary due to the State. The servants of the Rájá, however, used to measure out the grain in the slightly indented bottom of the *ndli*¹ turned upside down, but still called the grain given out a *ndli*. When the people brought back the grain ground, the Rájá's officer spread at the foot of a great stone seven mats and then mounting on the stone, scattered the flour in the wind. The heavier particles fell on the mats near the stone and none but the very finest reached the seventh mat. Then coming down he collected the flour from the seventh mat and told the people to take away the rest as it was not fit for his master's use. Of this fine flour, moreover, they were obliged to give a quantity equal to the nominal weight of the grain that had been given out to them from the Rájá's stores. The Rájá used also to seize their sons and daughters as slaves and the taxation was on no system. In order to provide themselves with water from a favourite spring (Hatchina) some twelve miles from the palace, the Katyúris stationed slaves along the road, who remained there night and day and passed the water from hand to hand. Bir Deo still further shocked the prejudices of the people by forcibly marrying his own aunt. He used to fasten iron rings on to the shoulders of the litter-bearers and pass through them the poles of the *dandi*,² so that the bearers might not be able to throw him down a precipice; but wearied with his tyranny and profligacy two men were at last found patriotic enough to sacrifice themselves for the good of the people. They reflected that they themselves were ruined, their children were taken as slaves and life was not

¹ A measure in common use.

² A litter in use in the hills.

worth living: so one day being pressed into service as litter-bearers, they flung themselves and the Rájá over a cliff and so perished. After the Rájá's death dissensions broke out amongst his family and each seized on a portion of the kingdom for himself, whilst the countries beyond Kumaon and Garhwál that had always paid tribute to the Katyúris threw off their allegiance." This account represents very fairly the state of the country at the time of the rising of the Chand family. We find then the Domkot Ráwat ruling in Káli Kumaon in subordination to a branch of the Katyúri family which had established itself in a fort on the Súi range. Another branch was settled in Doti, a third in Askot, a fourth in Bárahmandal, a fifth still occupied Katyúr and Dánpur, and a sixth had several settlements in Páli, chief of which were Dwára Hát and Lakhanpur. The ruined temples and buildings in many parts of the country are attributed to these Katyúri Rájás. The low carved stone pillars in eastern Kumaon known as *brih kumbh (vrihastambha)* are also attributed to the same dynasty and are said to have been erected to mark the halts or encampments in the royal progresses. Batten writes that "some of these ruins, especially the *chabútras* and wells, are not without beauty, at least in their carving, and the great number of small temples even now standing, each as it were dedicated to a separate idol, and the quantity of idol images themselves which have been found in their precincts, show that the Katyúri Rájás were devout worshippers of the whole Hindu Pantheon. The shape of the buildings and the character of the sculptures are said to be similar to the architectural features observed in the south of India; in Bundelkhand and on the banks of the Nerbudda. From the account above given it will at once be seen that the dynasty of which we are speaking was of low-land origin, and that no signs of an aboriginal extraction are visible in its remains.) As before the Mubammadan conquests of India, the rulers of a region so illustrious in the Shástras as the Himálaya mountains, being also by their position masters of the sacred sites at the various sources of the Ganges, may be supposed to have held rank equal with, if not superior to, the Rájás of *Katehir*, or the country between the mountains and the Ganges now called Rohilkhand; and as, after the establishment of the Mubammadan

empire in Hindustán, the Kumaon Rájas were found in hereditary possession of the Tarái by a tenure quite independent of any grant from low-land potentates, I see no reason for doubting that the Tarái throughout its whole extent formed an integral part of the Katyúri Kumaon Ráj. That it also formed an important part may be assumed from the almost absolute necessity still existing, that a large portion of plain country should, if not attached to the hills, at least be available for the annual resort of the hill-men and their cattle (an occupancy which under native rulers could hardly be maintained without an actual right of property in the soil, and actual separate possession thereof by the hill powers); and from analogies drawn from the late and existing feeling in Nepál in regard to the tract at its base." Beyond this all is conjecture regarding these ancient times; and the question whether Sambhal and Bareli were then subject to Katyúr may be left for discussion when more accurate materials are available.

There is nothing, however, to show us that during Katyúri times there was either such communication with the plains or such a surplus population in the hills as would enable them to colonise the Tarái. (On the other hand everything that we know indicates that from the ninth to the eleventh centuries the Tarái had relapsed into its original state of forest and its towns were deserted and allowed to fall to ruin; in fact it was not till the sixteenth century that the hill state attempted to exercise any practical control over any part of the low-lands beyond the strip close to the foot of the hills, known as the Bhábar.) Elsewhere we have given the pedigrees of the principal Katyúri families, but, strange to say, we do not find amongst them a single name of those known from the inscriptions already noticed. There is no reason, however, to doubt that these families are really members of the Katyúri stock, for, more than two centuries ago, their position as descendants of the old Rájas of Katyúr was recognised by the Chand rulers of Kumaon. It is commonly believed that the object of the Chands in neither destroying nor exiling the Katyúris was that they might be able to obtain wives for the members of their own family. The Chands often married Katyúri wives, but never gave their own daughters to the Katyúris.

These now intermarry with the families of the petty Vaisya Thákuri Rájás to the east of Doti and Jumla in Nepál. The Askot family also intermarries with the Nepálese, but of late years the poorer descendants of the Páli families have begun to intermarry with the more wealthy Khasiyas. Besides these dynasties sprung from the original stock, we find others who had no connection with the Katyúris¹ established at this time in Kumaon. Phaldakot and Dhaniyakot fell into the hands of a tribe of Káthi Rajpúts who claim to be of Surajbansi origin. Chaugarkha came into the power of the Padyár Rajpúts, whose capital village was Padyárkot. A family calling themselves Chandrabansi Rajpúts came from Pyuthána in Doti and established themselves at Mankot in Gangoli. After the conquest of Gangoli by the Chands this family returned to Doti, where their descendants still exist. Kota, Chhakháta, Katoli and the remaining pattis to the south became subject to the leading Khasiya families, whilst Sor, Síra, Dárma, Askot and Juhár were annexed to the Doti kingdom.

¹The Manurál and Kálakoti Rajpúts claim descent from the Katyúris.

